SHARP SERVICE MANUAL

ATSM880093RCS

APLD
Auto Program Locate Device

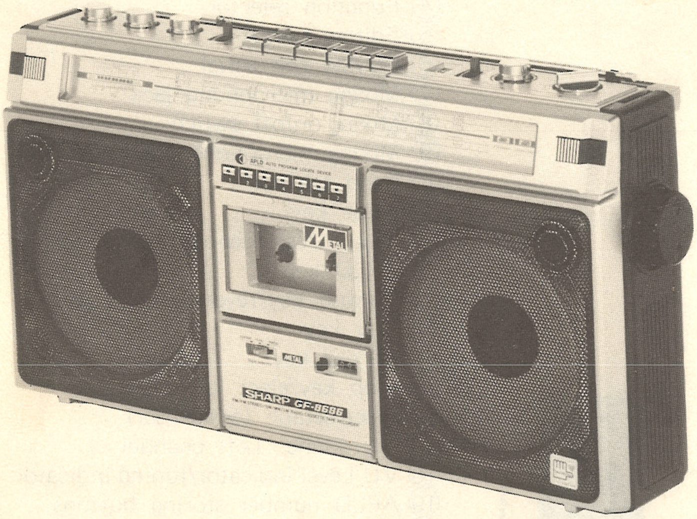


PHOTO : GF-8686H

STEREO RADIO CASSETTE RECORDER

MODEL
GF-8686H (Silver Panel)
GF-8686HB (Brown Panel)

SPECIFICATIONS

GENERAL

Type:	Portable stereophonic cassette tape recorder with built-in LW/MW/SW/FM 4-band radio
Power source:	AC 110/220/240 V, 50/60 Hz DC 12 V (Eight UM/SUM-1, R20 batteries or external DC supply)
Speakers:	16 cm (Woofer) x 2 (3.2 ohms) Horn type (Tweeter) x 2
Output power:	(DIN45 324) MPO 11W (5.5W + 5.5W AC Operation) RMS 9.2W (4.6W + 4.6W DC Operation)
Semiconductors:	9-IC (Integrated circuit) 29-Transistor 34-Diode 14-LED 1-SCR
Dimensions:	
Width:	502 mm (19-3/4")
Depth:	115 mm (4-1/2")
Hight:	270 mm (10-5/8")
Weight:	5.9 kg (13.42 lbs) (without batteries)

TAPE RECORDER SECTION

Tape:	Philips type compact cassette tape
Type:	4-track stereo cassette tape recorder
Tape speed:	4.8 cm/sec
Recording system:	AC bias
Erase system:	AC erase
Recording time:	60 minutes (with C-60 tape)
Fast forward or rewind time:	120 sec. (with C-60 tape)
Frequency response:	30 ~ 16,000 Hz (Metal tape) 40 ~ 14,000 Hz (CrO_2 tape) 40 ~ 12,000 Hz (Normal tape)
Wow and flutter:	0.17% (DIN 45511)
S/N ratio:	52dB (Metal tape)
Input sensitivity and input impedance:	
External microphone:	600 ohms
Mixing microphone	600 ohms
Record/playback socket	3.2 mV/10K ohms
Output level and loaded impedance:	
Headphones:	8 ~ 25 ohms
External speaker:	3.2 ~ 8 ohms
Record/playback socket	0.7 V/50K ohms

RADIO SECTION

Frequency range:	LW (150 ~ 285 kHz) MW (520 ~ 1,620 kHz) SW (5.95 ~ 18 MHz) FM (87.6 ~ 108 MHz)
Intermediate frequency:	LW/MW/SW 455 kHz FM 10.7 MHz
Circuit system:	4-Band superheterodyne system

SHARP CORPORATION OSAKA, JAPAN

NAMES OF PARTS

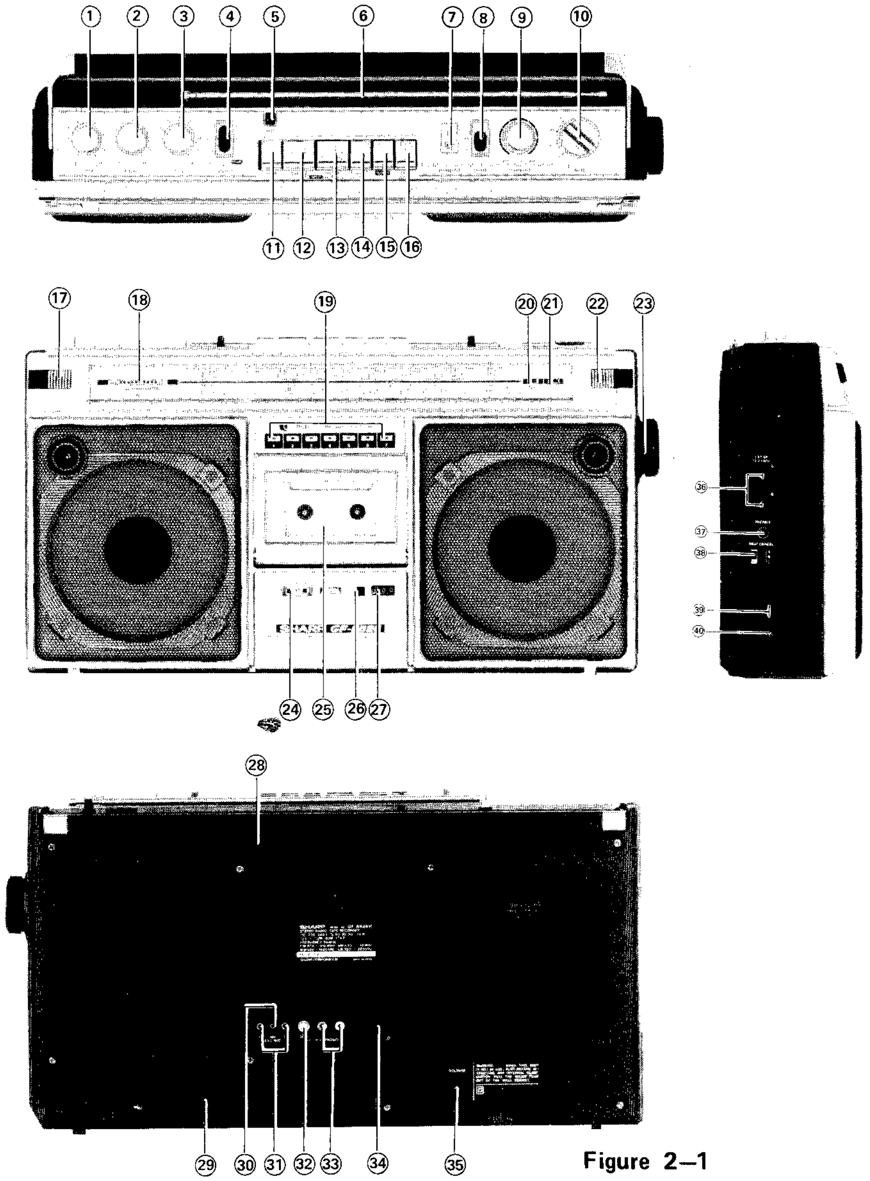
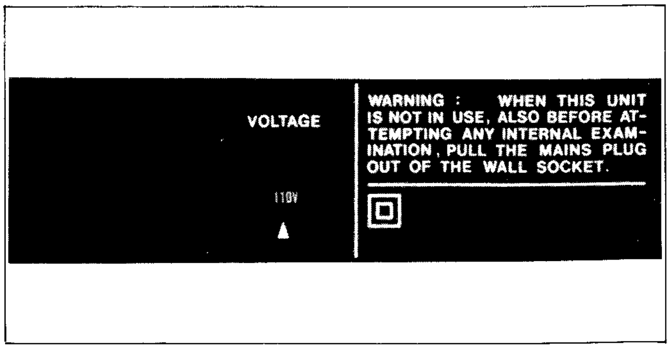


Figure 2–1

① Volume control
② Balance control
③ Tone control
④ Function selector
⑤ Editing switch
⑥ FM/SW rod aerial
⑦ Mixing microphone jack
⑧ Mixing on/off switch
⑨ Mixing microphone volume control
⑩ Band selector
⑪ Pause key
⑫ Fast forward wind key/forward APLD key
⑬ Rewind key/reverse APLD key
⑭ Play key
⑮ Record key
⑯ Stop key/eject key
⑰ Electrostatic (condenser) microphne: Left channel
⑱ VU Level indicator/tuning indicator
⑲ APLD number storing buttons
⑳ FM stereo indicator
㉑ Power indicator/battery condition indicator
㉒ Electrostatic (condenser) microphone: Right channel
㉓ Tunig control
㉔ Tape selector switch
㉕ Cassette compartment
㉖ Counter reset button
㉗ Digital tape counter
㉘ FM external antenna socket
㉙ Battery compartment
㉚ Remote start/stop switch socket
㉛ External microphone sockets
㉜ Earting terminal
㉝ Phono (record player) input sockets
㉞ Recording/playback socket (DIN Type)
㉟ AC supply voltage selector
㊱ External speaker sockets
㊲ Headphones sockets
㊳ Beat cancel switch
㊴ AC input socket
㊵ DC input socket

MAINS VOLTAGE SELECTION

Before operating the unit on mains, check the pre-set voltage. If the voltage is different from your local voltage, adjust the voltage as follows: Rotate the plug of the voltage selector by using a screwdriver so that your local voltage number can be seen.



WARNING : WHEN THIS UNIT IS NOT IN USE, ALSO BEFORE ATTEMPTING ANY INTERNAL EXAMINATION, PULL THE MAINS PLUG OUT OF THE WALL SOCKET.

Figure 2–2

DISASSEMBLY

Caution:
Prior to this work of disassembly, be sure to draw the power supply plug from AC Input terminal of the unit and also to remove a cassette tape from the cassette compartment.

1. REMOVAL OF FRONT CABINET

1) Remove the tape selector switch (knob) from the front panel.
2) Remove the eight (8) screws, at the rear of the unit, retaining the front cabinet, and push the stop/eject key to open the cassette compartment. Then lift the front cabinet up and detach. (See Fig. 3–1.)
3) Remove the speaker socket (SO105), built-in microphone socket (SO102), APLD number storing buttons socket (SO501) respectively from the front cabinet. Then the front cabinet can be separated from the rear cabinet. (See Fig. 3–2.)

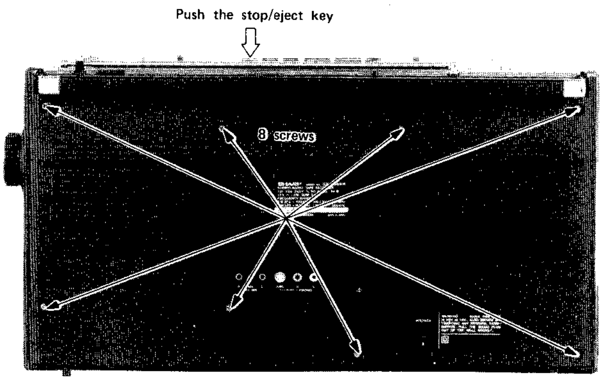

Push the stop/eject key
8 screws

Figure 3–1

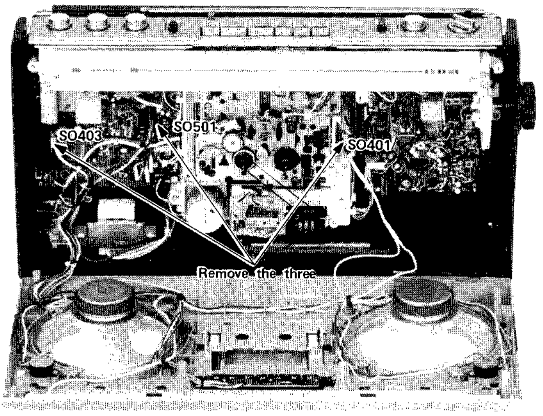

SO403
SO501
SO401
Remove the three

Figure 3–2

2. REMOVAL OF TAPE MECHANISM BLOCK

1) Pull out the five (5) knobs – volume control, balance control, tone control, mixing microphone volume control and band selector switch, and remove the top frame. (See Fig. 3–3.)
2) Remove the two (2) screws from the dial scale plate, and take it out. (See Fig. 3–3.)
3) Disconnect the two (2) sockets (SO901 and SO701) and the three (3) antenna tips connected with the tuner PWB and mixing PWB, and remove the five (5) screws from the tuner PWB. Then separate the tuner PWB from its frame. (See Fig. 3–4.)
4) Disconnect the three (3) sockets (SO101, SO103 and SO104) connected with the audio PWB. (See Fig. 3–5.)
5) Remove the five (5) screws from the tape mechanism block. Then the mechanism block can be removed. (See Fig. 3–5.)
Remove 5 knobs and top frame.

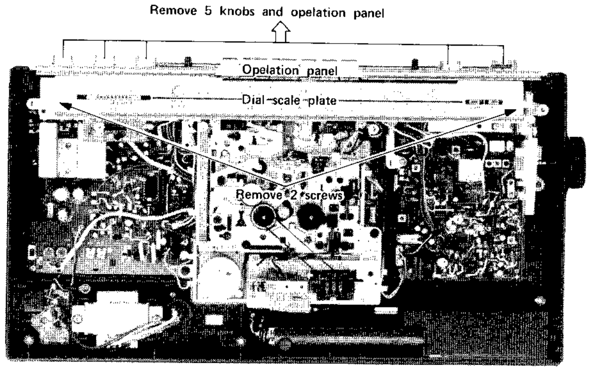

Remove 5 knobs and opelation panel
Opelation panel
Dial-scale-plate
Remove 2 screws

Figure 3–3

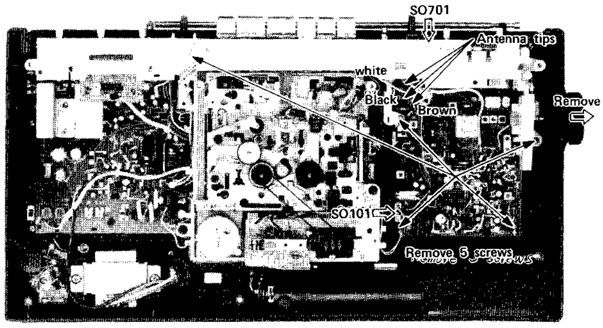

SO701
Antenna tips
white
Black
Brown
Remove
SO101
Remove 5 screws

Figure 3–4

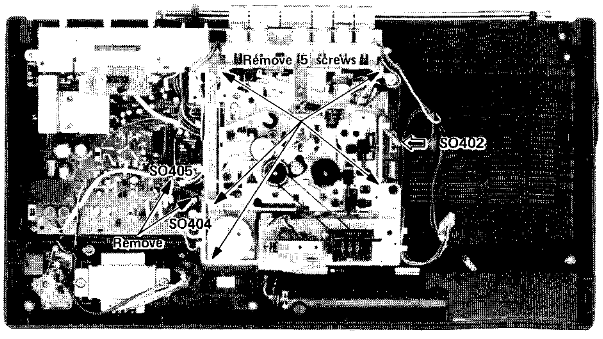
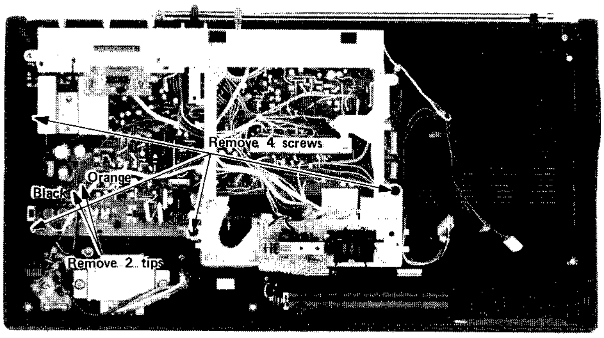

Remove 5 screws
SO402
SO405
SO404
Remove

Figure 3–5

3. REMOVAL OF AUDIO PWB

1) Disconnect the two (2) tips connected with the power PWB. (See Fig. 4–1.)
2) Remove the four (4) screws from the audio PWB, then the PWB can be removed.



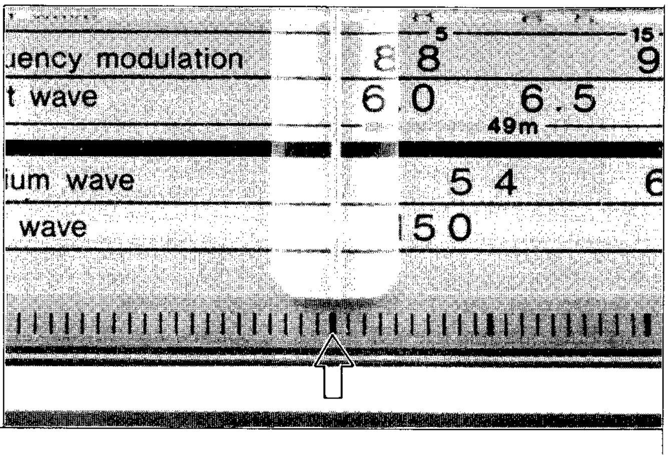
Remove 4 screws
Orange
Black
Remove 2 tips

Figure 4–1

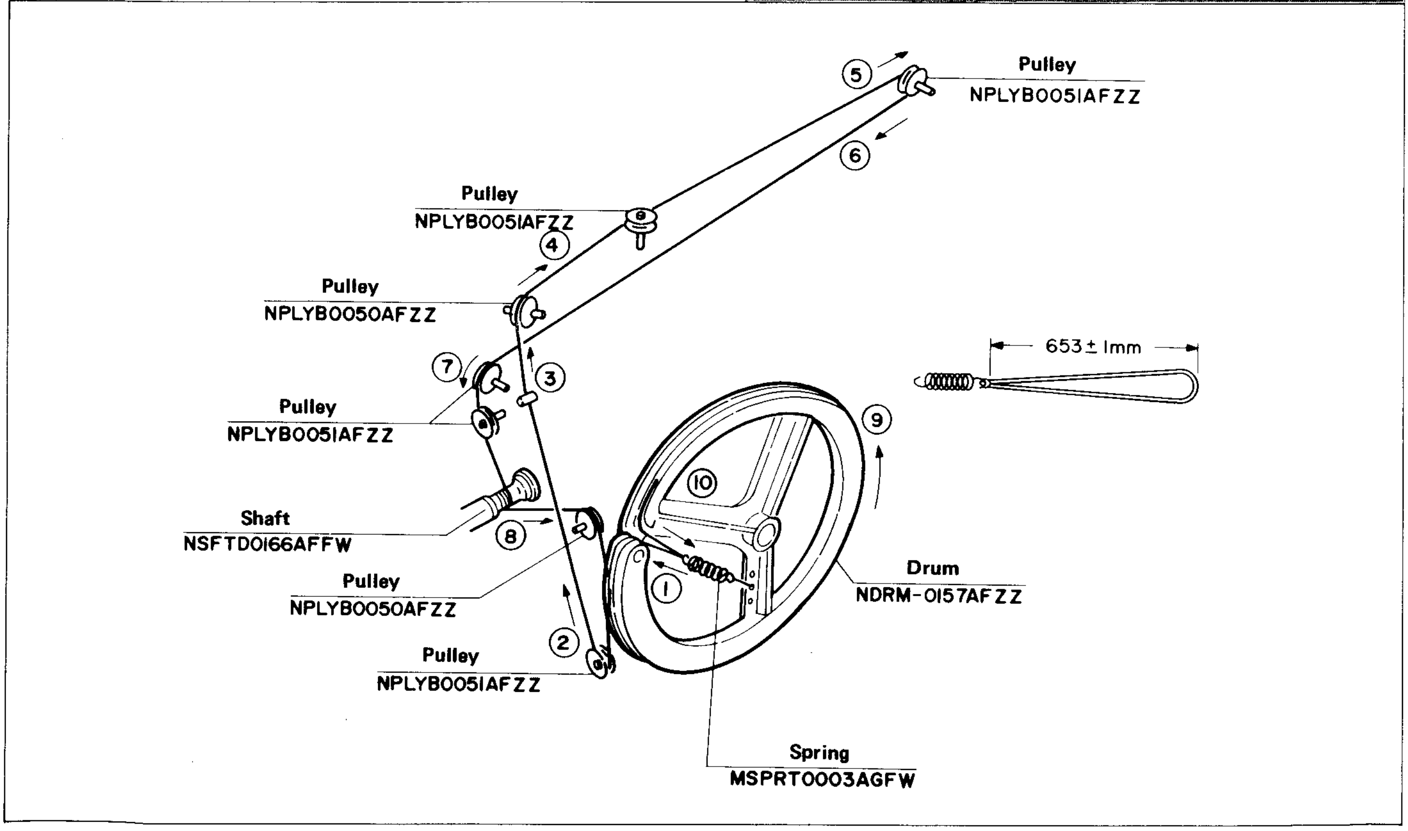
DIAL CORD STRINGING

- **Order of setting the cord**

1. Turn the drum fully counterclockwise, and set the cord in the numerical order from ① to ⑩ , as shown in Fig. 4–2.
2. Turn the tuning control knob driving shaft fully counterclockwise, and adjust the dial pointer to come into "0" position of the dial scale plate.



5
15
ency modulation
8 8
9
t wave
6.0
6.5
49m
ium wave
5 4
wave
150



⑤
Pulley
NPLYB0051AFZZ
⑥
Pulley
NPLYB0051AFZZ
④
Pulley
NPLYB0050AFZZ
⑦
③
Pulley
NPLYB0051AFZZ
653± 1mm
⑨
⑩
Shaft
NSFTD0166AFFW
⑧
Pulley
NPLYB0050AFZZ
①
Drum
NDRM-0157AFZZ
②
Pulley
NPLYB0051AFZZ
Spring
MSPRT0003AGFW

Figure 4–2

CIRCUIT DISCRIPTION

• APLD CIRCUIT

1. Program Space Detector Circuit

When the fast forward key or the rewind key is pushed after the play key has been pushed, the unit gets in forward APLD or reverse APLD mode. +B voltage (12 V) then enters via APLD switch (SW502) into pin ⑨ of APLD integrated circuit (IC501), so that the APLD circuit starts to operate.

Signal coming out of pin ⑧ of the preamplifier integrated circuit (made of IC201 and IC301) is applied to pin ① of the APLD integrated circuit (IC501). Output (pin ⑧) of this IC501 changes its level according to whether the tape is running on a signal-recorded part or a non-signal recorded part (or a low-level signal recorded part); say, it becomes either "High" level or "Low" level, with a recorded program or without it. In this connection, level of the signal is determined by the resistors (R502 and R504), and its time by the resistor (R503) and electrolytic capacitor (C503).

Output signal of pin ⑧ of the IC501 is routed via the electrolytic capacitor (C507) to the base of transistor (Q501). This electrolytic capacitor starts to charge itself just when that output at pin ⑧ changes from "High" to "Low" level, resulting in that the transistor (Q501) turns on and the "on" state continues until its base has come to have its cut-off voltage (Vbe). With below the cut-off voltage, the transistor (Q501) turns off.

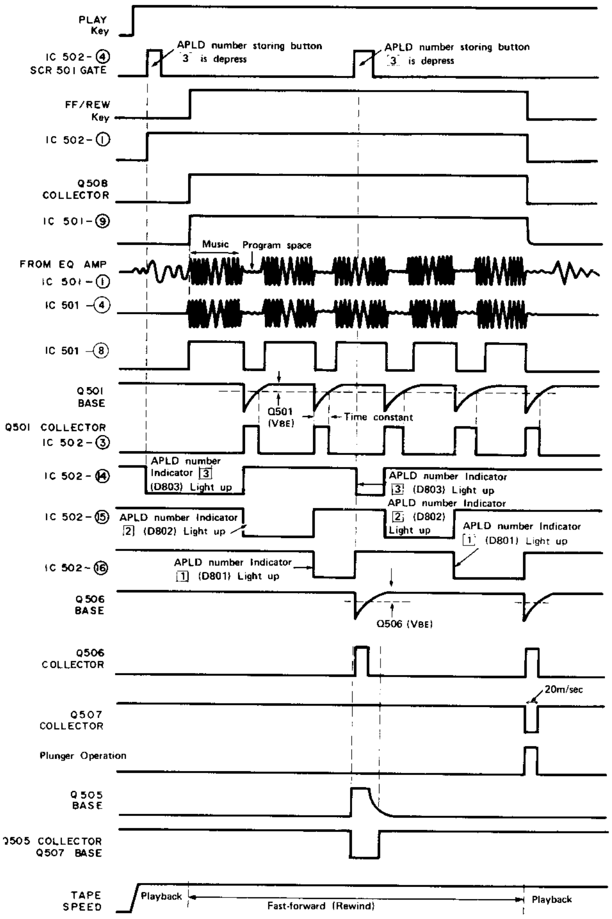

PLAY Key
IC 502-④ SCR 501 GATE
APLD number storing button "3" is depress
APLD number storing button "3" is depress
FF/REW Key
IC 502-①
Q508 COLLECTOR
IC 501-⑨
Music
Program space
FROM EQ AMP IC 501-①
IC 501-④
IC 501-⑧
Q501 BASE
Q501 (VBE)
Time constant
Q501 COLLECTOR IC 502-③
IC 502-⑭
APLD number Indicator 3 (D803) Light up
APLD number Indicator 3 (D803) Light up
IC 502-⑮
APLD number Indicator 2 (D802) Light up
APLD number Indicator 2 (D802) Light up
IC 502-⑯
APLD number Indicator 1 (D801) Light up
APLD number Indicator 1 (D801) Light up
Q506 BASE
Q506 (VBE)
Q506 COLLECTOR
20m/sec
Q507 COLLECTOR
Plunger Operation
Q505 BASE
Q505 COLLECTOR Q507 BASE
TAPE SPEED
Playback
Fast-forward (Rewind)
Playback

Figure 5–1

2. Program Selector Circuit

- **In the case the APLD number storing buttons is pushed after the play key has been depressed:**

When the APLD number storing buttons "3", for instance, is depressed following a depression of the play key, voltage (7.2 V) is caused and it enters, via the resistor array (R527), APLD number storing buttons (SW8–C) and diode (D504), into the gate of thyristor (SCR501) so that this thyrystor turns on; with this, voltage at the base of transistor (Q502) drops so that this transistor also turns on to produce a voltage 5.4 V. This voltage 5.4 V is supplied to pin ① (power supply terminal) of the APLD integrated circuit (IC502) and also to the anode of the APLD number indicator. Still it is applied to pin ④ of that IC502 to activate the oscillator circuit included in it. The oscillator circuit begins to oscillate at the frequency (approx. 40 kHz) determined by the capacitor (C513) and resistor (R509) so that pin ⑭ of the IC502 becomes "Low" level. The result is that the APLD number "3" is preset in the memory, with the APLD number indicator "3" (D803) lighting.

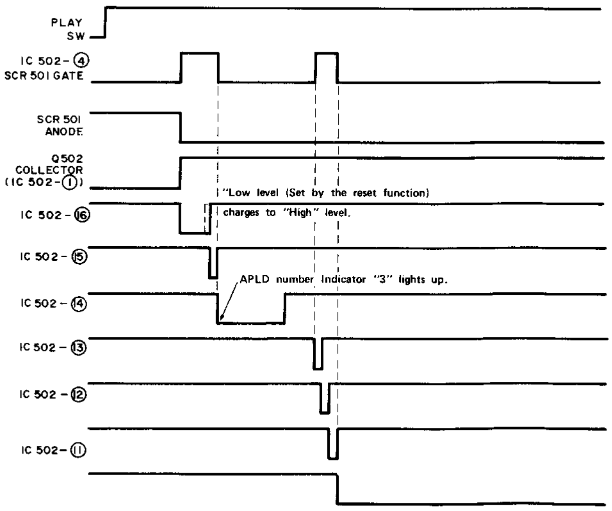
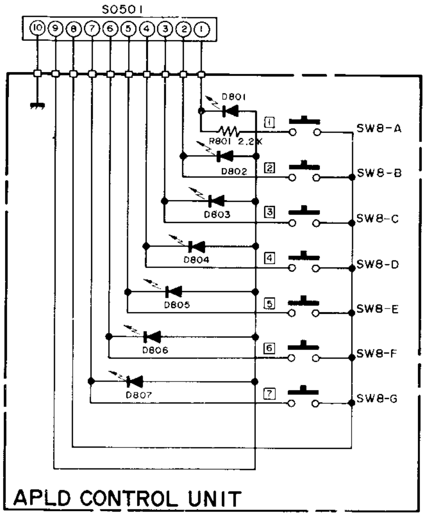

PLAY SW
IC 502-④ SCR 501 GATE
SCR 501 ANODE
Q502 COLLECTOR (IC 502-①)
"Low level (Set by the reset function)
IC 502-⑯
charges to "High" level.
IC 502-⑮
APLD number Indicator "3" lights up.
IC 502-⑭
IC 502-⑬
IC 502-⑫
IC 502-⑪

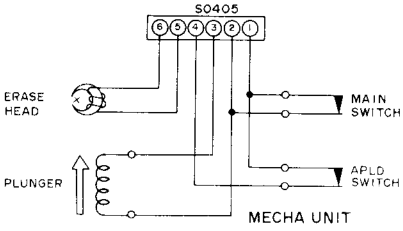
Figure 5–2

- **In the case the fast forward key or rewind key is pushed after the play key has been depressed — without pushing the APLD number storing button:**
When the unit gets in the forward APLD or reverse APLD mode, voltage is caused and it reaches via the APLD switch (SW502) into the base of transistor (Q508) so that this transistor turns on to produce a voltage 5.4 V.
This voltage is applied to pin ① of the APLD integrated circuit (IC502), and pins ③ and ④ of this IC502 become "Low" level to active the reset circuit included in it: the result is that pin ⑯ becomes "Low" level so that the APLD number indicator "1" (D801) lights up. That is to say, the APLD number "1" program is preset even without pushing the APLD number storing button "1".

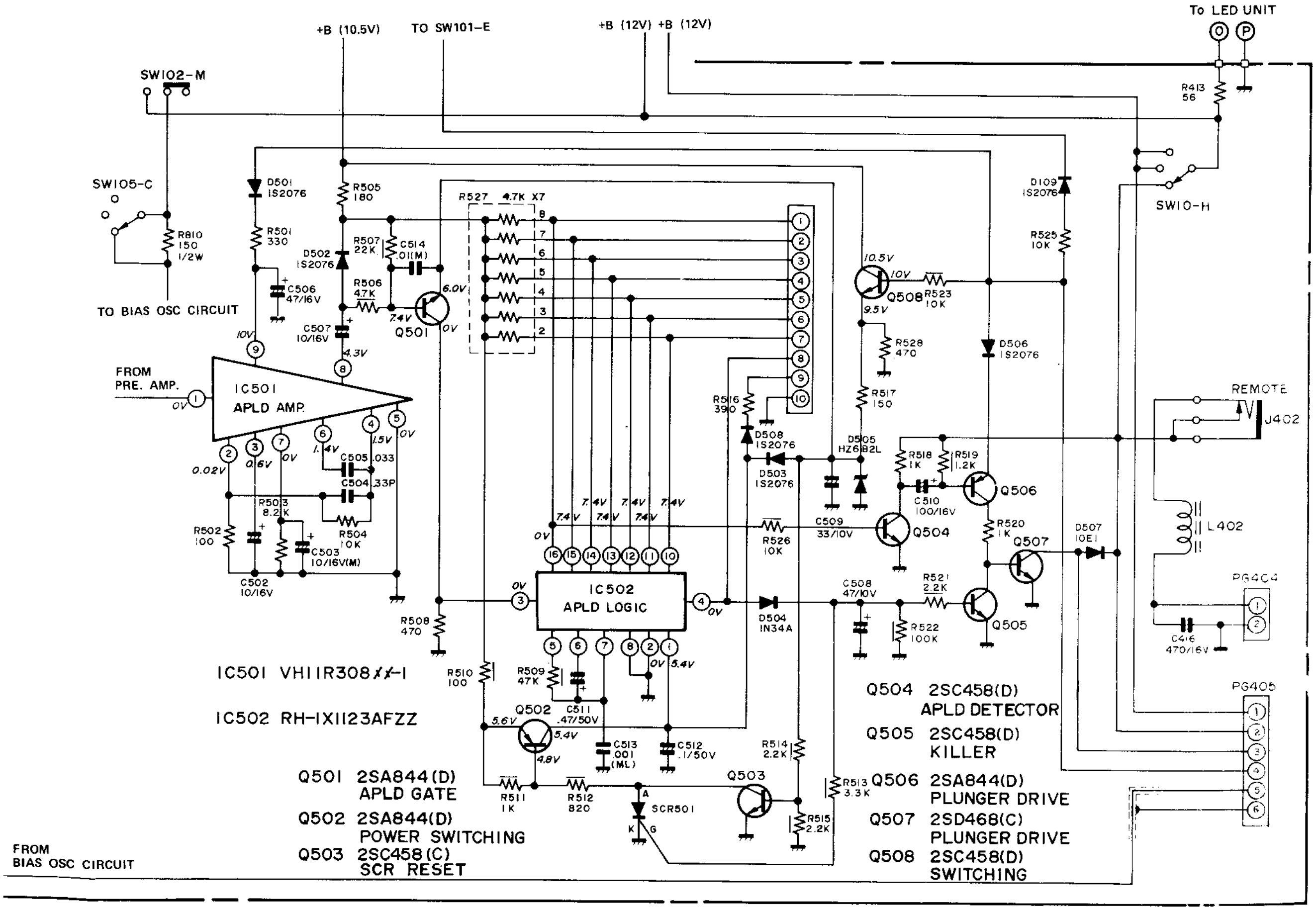


SO501
⑩⑨⑧⑦⑥⑤④③②①
D801
R801 2.2K
D802
D803
D804
D805
D806
D807
1
2
3
4
5
6
7
SW8-A
SW8-B
SW8-C
SW8-D
SW8-E
SW8-F
SW8-G
APLD CONTROL UNIT

- **In the case one entry which has been made by the APLD number storing buttons must change to another:**
To illustrate, suppose that entry of "3" must be corrected to that of "7". Out of seven pins ⑩ to ⑯ of the APLD integrated circuit (IC502), pin ⑭ corresponding to the entry "3" has been at "Low" level while the others (pins ⑩, ⑪, ⑫, ⑬, ⑮ and ⑯) have been at "High" level.
At this time, when the APLD number storing button "7" is pushed, voltage is caused and it enters, via the APLD number storing buttons (SW8–G), into pin ④ of the integrated circuit (IC502) so that the included oscillator circuit begins to oscillate; and pins ⑭, ⑬, ⑫, ⑪ and ⑩ become "Low" level in the order.
As pin ⑩ reaches "Low" level, the voltage at pin ④ drops to zero stopping the oscillation. This way, the APLD number "7" is preset with its indicator "7" lighting.
Note:
When any APLD number storing buttons (either of "2" thru "7") other than "1" is depressed at the beginning; first, the "1" preset circuit operates to cause the indicator "1" to flicker, even though for moment; next, after that, the relevant proper indicator (either of "2" thru "7") will light up in no time.



SO405
⑥⑤④③②①
ERASE HEAD
MAIN SWITCH
PLUNGER
APLD SWITCH
MECHA UNIT



To LED UNIT
⓪ Ⓟ
+B (10.5V)
TO SW101–E
+B (12V) +B (12V)
SW102–M
SW105–C
R810 150 1/2W
TO BIAS OSC CIRCUIT
D501 1S2076
R501 330
R505 180
D502 1S2076
R507 22K
C514 .01(M)
R506 4.7K
C506 47/16V
C507 10/16V
R527 4.7K X7
Q501
FROM PRE. AMP.
IC501 APLD AMP
C505 .033
C504 33P
R503 8.2K
R504 10K
R502 100
C503 10/16V(M)
C502 10/16V
R508 470
IC502 APLD LOGIC
R516 390
D508 1S2076
D503 1S2076
D505 HZ6B2L
R518 1K
R519 1.2K
C510 100/16V
C509 33/10V
R526 10K
Q504
Q506
R520 1K
Q507
D507 10E1
C508 47/10V
R521 2.2K
Q505
R522 100K
D504 IN34A
Q508
R523 10K
R528 470
R517 150
D506 1S2076
D109 1S2076
R525 10K
R413 56
SW10–H
REMOTE
J402
L402
PG404
C416 470/16V
PG405
R510 100
R509 47K
Q502
C511 .47/50V
C513 .001 (ML)
C512 .1/50V
R511 1K
R512 820
SCR501
Q503
R514 2.2K
R513 3.3K
R515 2.2K
FROM BIAS OSC CIRCUIT
IC501 VHI IR308✗✗–I
IC502 RH–IX1123AFZZ
Q501 2SA844(D) APLD GATE
Q502 2SA844(D) POWER SWITCHING
Q503 2SC458(C) SCR RESET
Q504 2SC458(D) APLD DETECTOR
Q505 2SC458(D) KILLER
Q506 2SA844(D) PLUNGER DRIVE
Q507 2SD468(C) PLUNGER DRIVE
Q508 2SC458(D) SWITCHING

Figure 6

PLUNGER DRIVE CIRCUIT

When pin ⑯ of the integrated circuit (IC502) changes to "High" from "Low" level, the transistor (Q504) turns on, and, at the same time, +B (12 V) is caused and it enters via the resistor (R519) into the electrolytic capacitor (C510) to charge it.

The transistor (Q506) then turns on, and its "on" state lasts until its base voltage drops to its cut-off level. Then the transistor (Q507) turns on to allow the plunger solenoid (SOL501) to bring its one end an earth voltage. The plunger solenoid (SOL501) is now permitted to become active so that the unit comes free of the forward or reverse APLD mode, getting in the play mode instead.

MUTING CIRCUIT

When the fast forward or rewind key is pushed while the unit is in the play mode, the APLD switch (SW502) becomes alive to apply voltage to the base of transistor (Q204 or Q304). The transistor (Q204 or Q304) then turns on to lower a lot of the reproduced sound – the sound which is likely to come out when the unit is detecting program-to-program space on the cassette tape.

PLUNGER DRIVE CANCEL CIRCUIT

This circuit starts its operation the moment any of the APLD number storing buttons is pushed while the APLD indicator "1" (D801) is lighting, and it is to stop the action of the plunger solenoid then.

For example, take the case where you push the APLD number storing button "3" when the APLD indicator "1" (D801) is still lighting.

As pin ⑯ of the integrated circuit (IC502) changes to "High" from "Low" level, its pin ④ is fed with a voltage 7.2 V and this voltage is routed via the diode (D504) to the transistor (Q505) to turn it on. This results in that the transistor (Q506) stops its output entering the base of transistor (Q507), so that the transistor (Q507) stays off to prevent the plunger solenoid from operating. The electrolytic capacitor (C508) and resistor (R522) provides a time constant by which the transistor (Q505) is controlled regardless of whether it turns on or off: with that time constant, the transistor (Q506) is able to turn on for a longer time than the other (Q505) is.

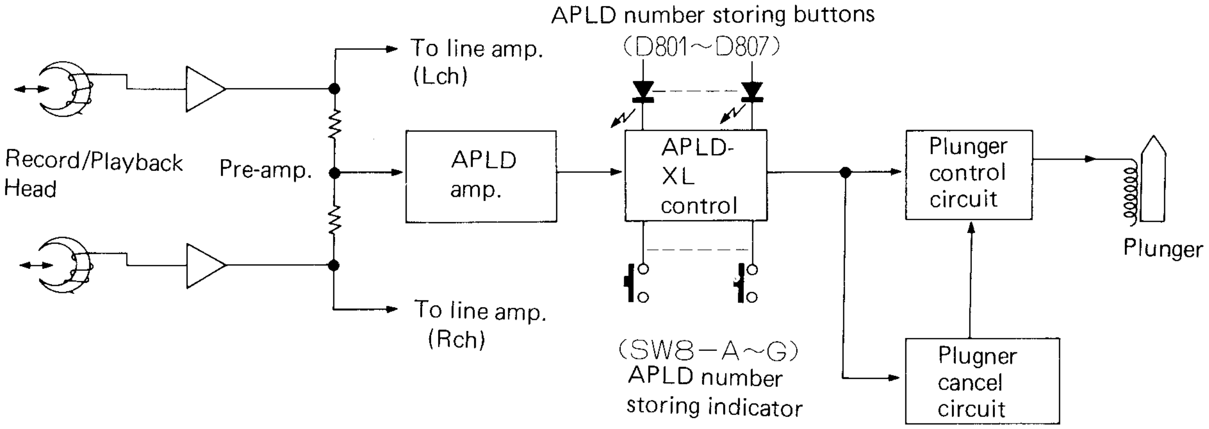


Figure 7 APLD CIRCUIT BLOCK DIAGRAM

MECHANICAL ADJUSTMENT

PINCH ROLLER PRESSURE ADJUSTMENT (Refer to Fig. 8–1).

1. Set the unit in play mode.
2. Use a tension gauge (500 grams) to press it to the specified position of the pinch roller to make the pinch roller apart from the capstan (at the time, the pinch roller stops to rotate). Then, gradually weaken a force of the tension gauge and read the value when the pinch roller begins to rotate. Make sure that the reading of tension gauge is 275 to 375 grams.
3. If the above value is not satisfied, adjust the pinch roller pressure spring by bending it, or replace.

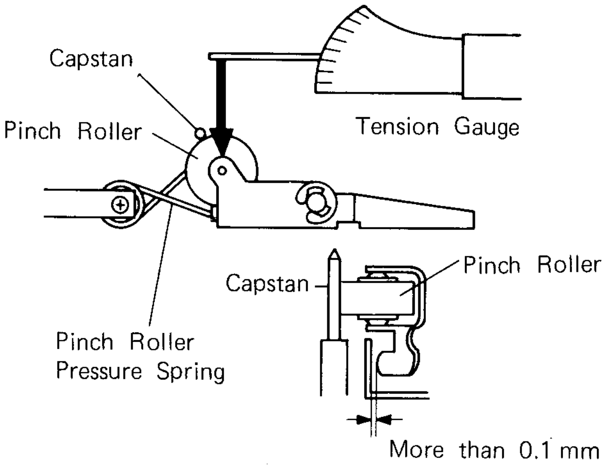

Capstan
Pinch Roller
Tension Gauge
Capstan
Pinch Roller
Pinch Roller Pressure Spring
More than 0.1 mm

Figure 8–1

CHECKING OF PAUSE MECHANISM (Refer to Fig. 8–2)

1. Set the unit in play mode.
2. Slowly push the pause button, and check then that the take-up slip roller comes apart the take-up reel turntable and, at the almost same time, the pinch roller also comes apart the capstan – there must be a clearance of more than 0.2 mm between the parts.
3. If it is not satisfied in step 2, adjust it by bending the Ⓐ part of the pause lever.

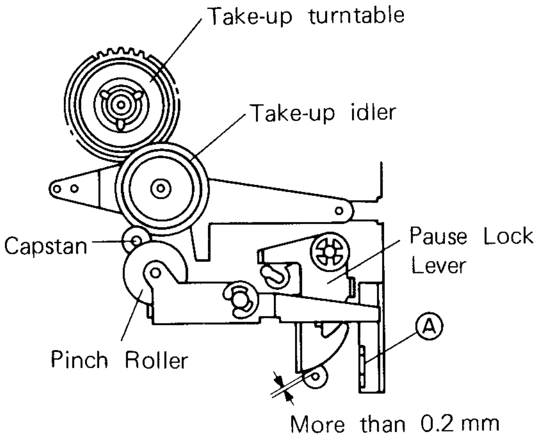

Take-up turntable
Take-up idler
Capstan
Pause Lock Lever
Ⓐ
Pinch Roller
More than 0.2 mm

Figure 8–2

POSITIONAL ADJUSTMENT OF PLUNGER (Refer to Fig. 8–3)

1. Press the plunger's iron core against the plunger body as shown in Fig. 8–3, and push the rewind button. Adjust then the position of the plunger so that the rewind lever lock pin touches the part Ⓐ of APLD lock plate, and tighten the screws of the plunger.

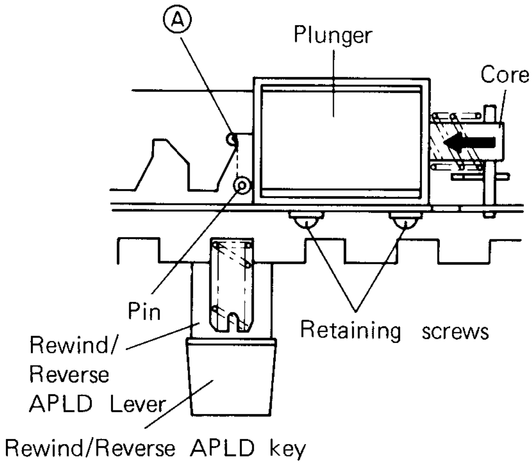

Ⓐ
Plunger
Core
Pin
Rewind/ Reverse APLD Lever
Retaining screws
Rewind/Reverse APLD key

Figure 8–3

THRUST CLEARANCE ADJUSTMENT OF FLYWHEEL (CAPSTAN) (Refer to 9–1)

1. Slowly rotate the capstan thrust clearance adjusting screw clockwise until there will be no thrust clearance.
2. Next, rotate the thrust clearance adjusting screw about 1/8 to 3/8 of its full turn counterclockwise. The thrust clearance now created must be 0.1 to 0.3 mm since one pitch of the adjusting screw refers to 0.8 mm.

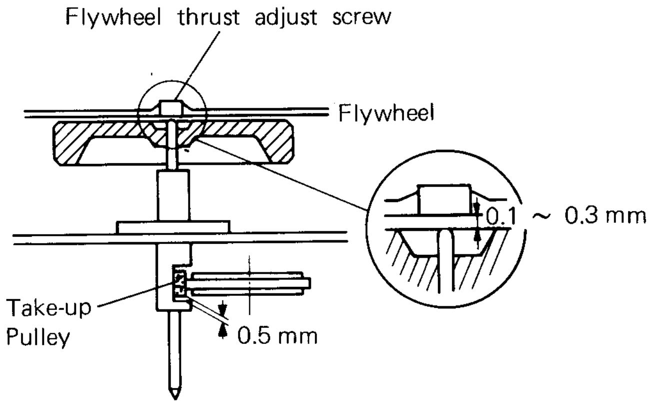


Figure 9–1

TAKE-UP PULLEY POSITIONAL ADJUSTMENT

(Refer to Figure 9–1)

Adjust clearance between the take-up pulley and flywheel bearing so as to obtain 0.5 mm.

TORQUE CHECK IN PLAY/FAST FORWARD/REWIND MODES (Refer to Fig. 9–2)

1. Mount a torque measuring reel on the turntable (on the take-up side at Play or Fast Forward mode and to the supply side at Rewind mode).
2. Gradually weaken an applied force by the tension gauge until the turntable begins to rotate at a nearly steady speed, and measure the reading of tension gauge.
3. Normal torque values in each mode are tabulated below.

   Note:

   In play mode, check that, when the turntable (take-up side) is stopped, see that the slip roller is still rotaing. At the time, there is no slipping between the slip roller and take-up Idler and between the drive belt and Motor pulley.

Mode	Torque value
Play	35 to 60 gram-cm
Fast Forward	70 to 100 gram-cm
Rewind	70 to 100 gram-cm

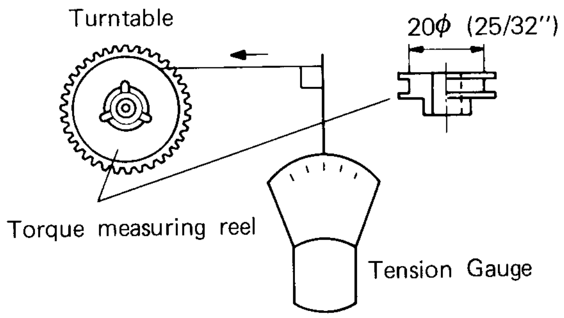


Figure 9–2

TAPE SPEED ADJUSTMENT (Refer to Fig. 10–1)

1. Connect a frequency counter to the external speaker terminal (J203 or J303), across a resistor (4Ω, 2W, 5%) connected between the earth and signal input side of this terminal.
2. Using a test tape (TEAC MTT–111, –10 dB, 3 kHz recorded), play it back (at the midpoint but not at the running start of end point.)
3. Use a bladed screwdriver to adjust, through the adjusting hole at the bottom of motor, the semi-variable resistor so that the reproduced frequency becomes 2965 to 2990 Hz.

Note:

Before the adjustment, check that there is no stain nor other impurities on the motor pulley, drive belt, flywheel, take-up pulley, take-up idler and take-up turntable.

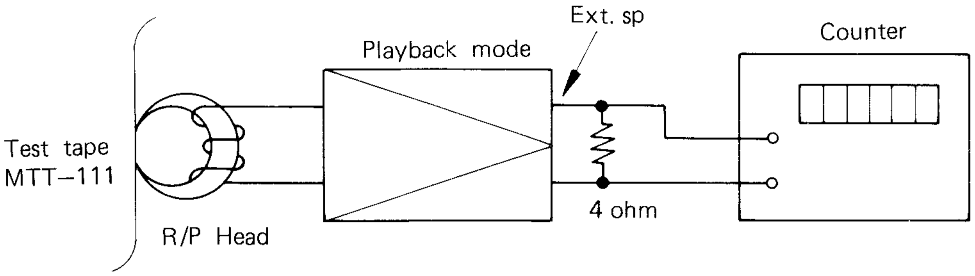

Ext. sp
Counter
Playback mode
Test tape
MTT−111
R/P Head
4 ohm

Figure 10–1

ALIGNMENT POINTS (RECORD/PLAYBACK AMP.)

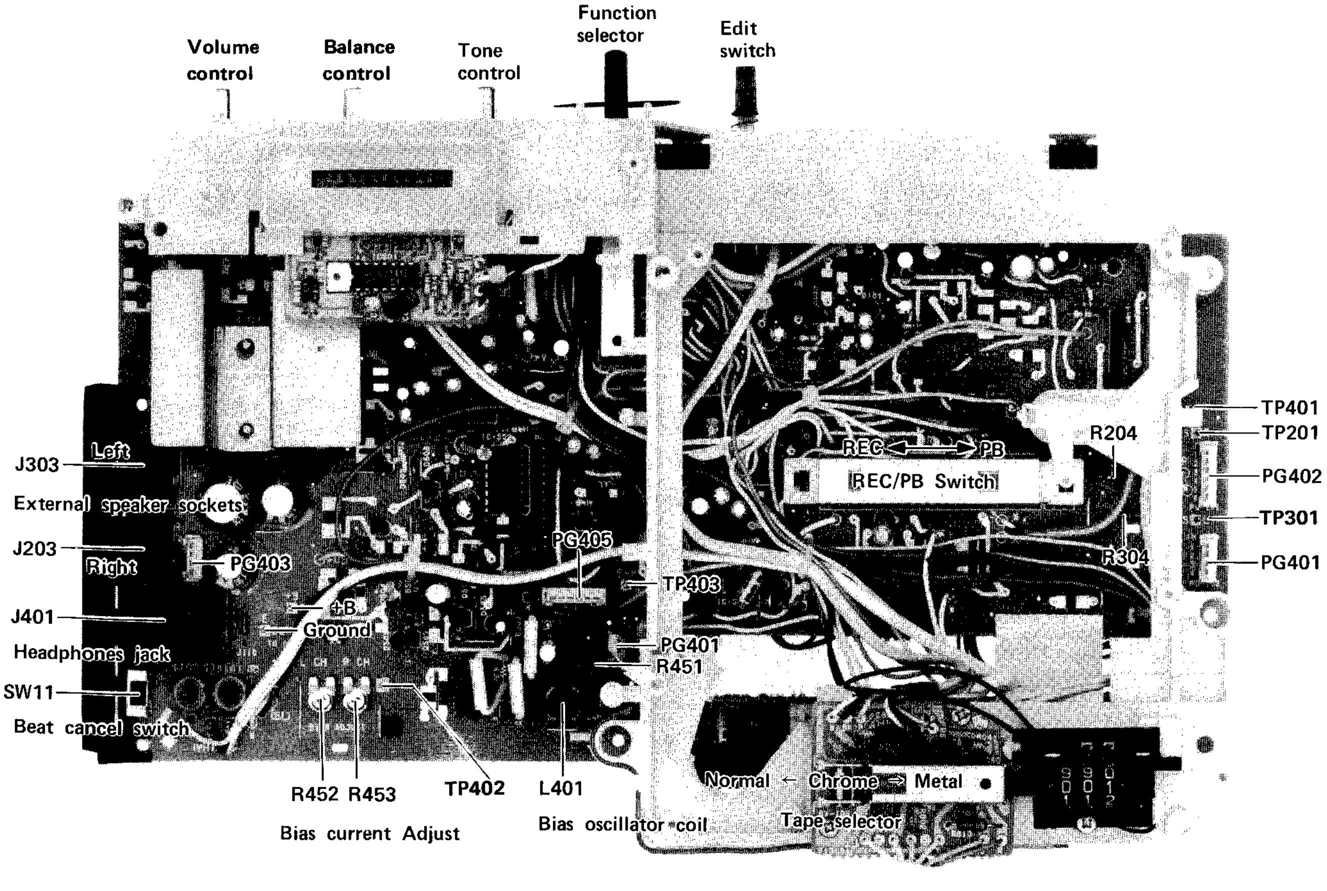

Volume control
Balance control
Tone control
Function selector
Edit switch
J303
Left
External speaker sockets
J203
Right
J401
Headphones jack
SW11
Beat cancel switch
PG403
+B
Ground
PG405
TP403
PG401
R451
R452
R453
Bias current Adjust
TP402
L401
Bias oscillator coil
REC
PB
REC/PB Switch
R204
R304
TP401
TP201
PG402
TP301
PG401
Normal ← Chrome ⇒ Metal
Tape selector

Figure 10–2

In the following electrical adjustments, it is useful for you to see the Adjusting Points in Fig. 10–2 in the previous page.

ADJUSTMENT OF BIAS CURRENT AND BIAS OSCILLATION FREQUENCY OF RECORD AMPLIFIER (Refer to Fig. 11–1)

1. Connect VTVM between the test points TP201 and TP301 (or TP401), across a resistor (R204 or R304) on the PWB.
2. Set the function selector at "tape" position.
3. Set the tape selector switch (SW105) at "normal" position.
4. Connect an oscilloscope (vertical input terminal) to the output terminal of VTVM, and connect a C.R oscillator to the oscilloscope (horizontal input terminal).
5. Set the unit in record mode, and adjust the bias oscillation coil (L401) so that the bias oscillation frequency becomes 50 ± 1 kHz when the beat cancel switch is set at "B" position and it becomes 53k ± 3kHz when the switch is set at "C" position and it becomes 47k ± 3kHz when the switch is set "A" position.
6. Set the tape selector switch (SW105) at "normal" position.
7. Adjust the bias current adjusting semi-variable resistor (R452 or R453) so that the reading of VTVM is 42 ± 2 mV. Change the tape selector switch (SW105) to "metal" position or "CrO_2" position, and check then that the VTVM is reading 66 to 76 mV.

Note:
If the mechanism block is removed from the unit, this causes the record/playback selector switch (SW102) to come to "play" position. When adjusting the bias oscillation coil (L401), therefore, be sure to make together the unit and the mechanism block or to set the record/playback selector switch (SW102) at "record" position, beforehand.

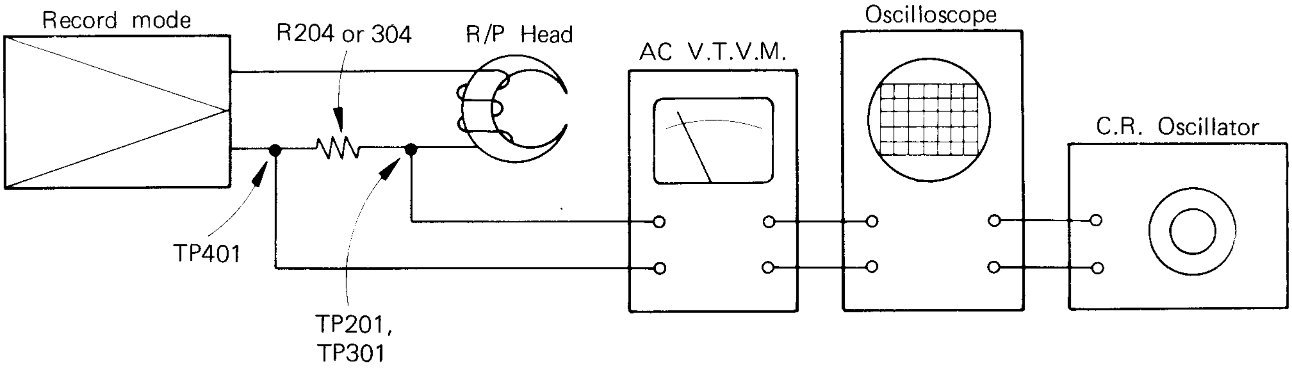


Figure 11–1

ERASE CURRENT CHECK (Refer to Fig. 11–2)

1. Connect VTVM, across a resistor (R451), to the unit.
2. Set the unit in record mode.
3. Set the tape selector switch (SW105) at "metal" position, and see then the VTVM is reading 180 to 260 mV.
4. Set the tape selector switch (SW105) at "normal" position, and see then the VTVM is reading 100 to 140 mV.

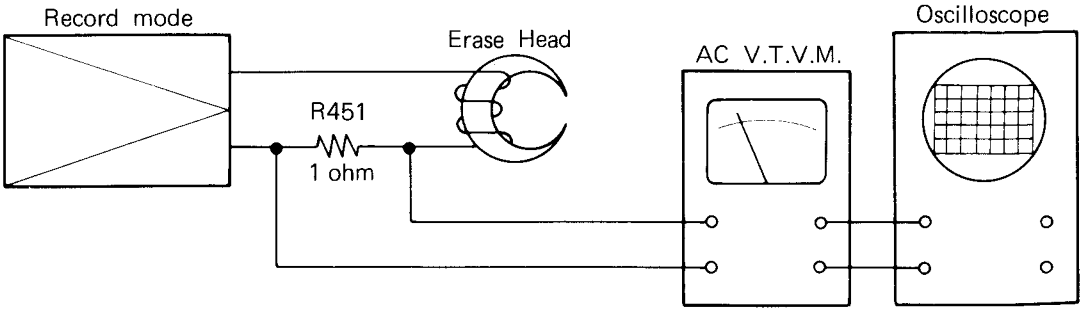


Figure 11–2

SENSITIVITY CHECK OF RECORD AMPLIFIER (Refer to Fig. 12–1)

1. Connect VTVM between the test point (TP201 or TP301) and earth (TP401).
2. Short the secondary side of bias oscillation coil (L401) to stop its oscillation.
3. Set the function selector at "tape" and the tape selector switch (SW105) at "normal" position.
4. Connect a C.R oscillator to the external microphone jack (J201 or J301), and apply signal of oscillation frequency 1 kHz, input level –78 dB (1 V = 0 dB), to the unit.
5. Place the unit in record mode, and see then that the VTVM is reading 1.75 mV.

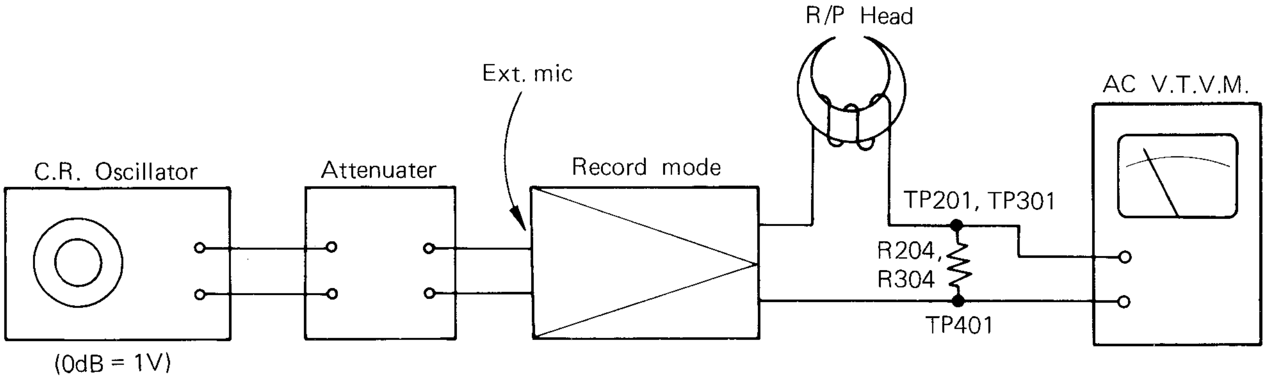

R/P Head
Ext. mic
AC V.T.V.M.
C.R. Oscillator
Attenuater
Record mode
TP201, TP301
R204,
R304
TP401
(0dB = 1V)

Figure 12–1

SENSITIVITY CHECK OF L.E.D. METER (Refer to Fig. 12–2)

1. Connect VTVM between the test point (TP201 or TP301) and earth (TP401).
2. Connect a C.R oscillator to the external microphone jack (J201 or J301), and apply signal of oscillation frequency 1 kHz, input level –72 dB (1 V = 0 dB) to the unit.
3. Place the unit in record mode, and adjust the input signal so that the VTVM will read 3.5 mV when the tape selector switch (SW105) is set at "normal" position.
4. Check then that the sixth segment of the L.E.D. meter is lighting.

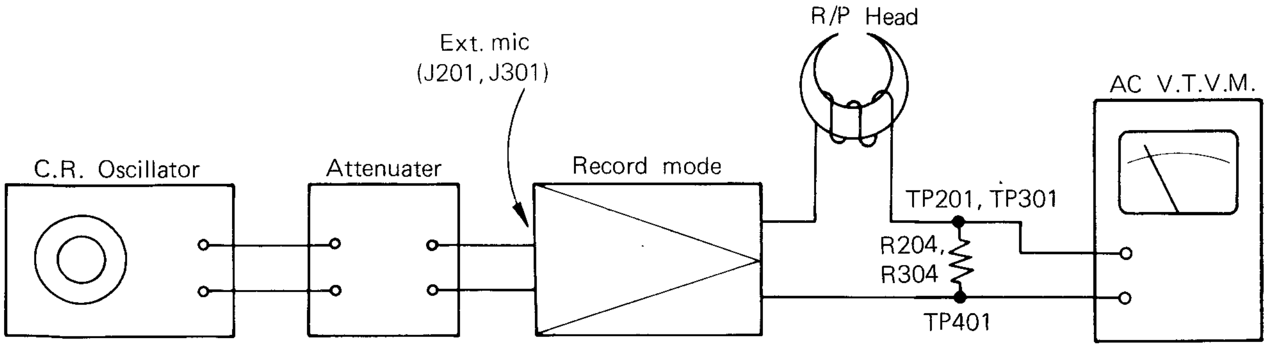
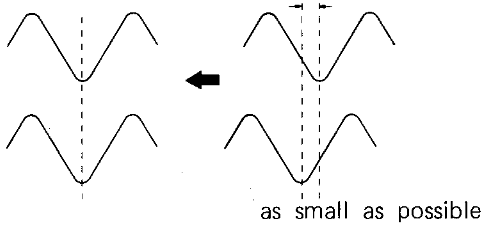

R/P Head
Ext. mic
(J201, J301)
AC V.T.V.M.
C.R. Oscillator
Attenuater
Record mode
TP201, TP301
R204,
R304
TP401

Figure 12–2

■ RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

(Refer to Figure 13–1)

1. Connect load resistor (3.2 ohm), to the EXT. SP sockets (J203, J303) and connect outputs of both the right and left channels to the channel 1 and channel 2 input terminals of oscilloscope.
2. Set the volume control (VR403-A, B) to maximum tone control (VR401-A, B) to high and balance control to mechanical centerposition.


as small as possible

3. Insert the test tape (MTT-114, 10 kHz, –10 dB Recorded).
4. Adjust the head azimuth adjusting screw so that sine waveform attains the maximum and the same phase in right and left.
5. Even without using the oscilloscope, also adjust the head azimuth adjusting screw so that outputs of both the right and left channels attain the maximum and the same phase in right and left.

Note: For some heads, there may be a phase difference between right and left channels when the output is made maximum. In this case, adjust the head azimuth so that such phase difference will be as small as possible while keeping the output still maximum.

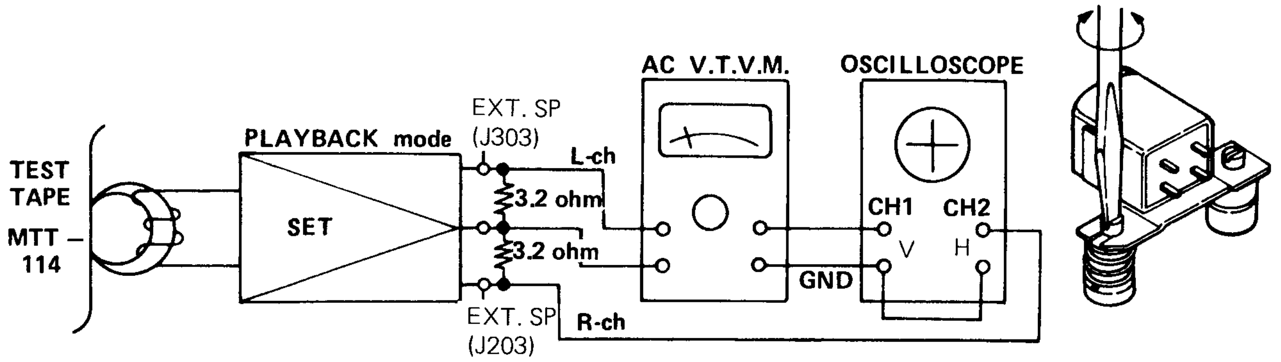

TEST
TAPE
MTT – 114
PLAYBACK mode
SET
EXT. SP
(J303)
L-ch
3.2 ohm
3.2 ohm
EXT. SP
(J203)
R-ch
AC V.T.V.M.
OSCILLOSCOPE
CH1
CH2
V
H
GND

Figure 13–1

SENSITIVITY CHECK OF TAPE PLAYBACK

(Refer to Fig. 13–2)

1. Connect VTVM, across a resistor (3.2 ohms), to the external speaker jack (J203 or J303).
2. Set the tape selector switch (SW105) at "normal", the volume control at "maximum", and the tone control at "high", and the balance control at "center" position.
3. Play a test tape MTT–118 (1 kHz, –10 dB prerecorded).
4. Check then that the VTVM is reading 1.07 to 2.1 V and also that the second or fourth segment of the L.E.D. meter are lighting.

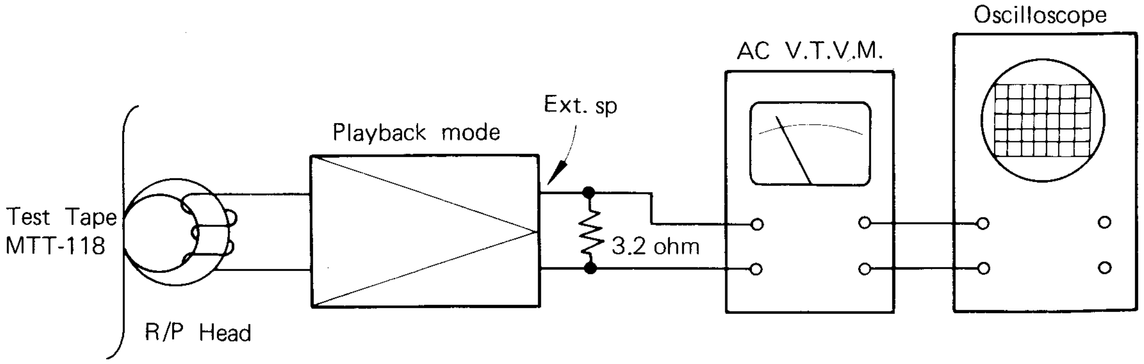

Test Tape
MTT-118
R/P Head
Playback mode
Ext. sp
3.2 ohm
AC V.T.V.M.
Oscilloscope

Figure 13–2

GENERAL ALIGNMENT INSTRUCTION

Should it become necessary at any time to check the alignment of this receiver, proceed as follows;

1. Set the volume control (VR403A-B) to maximum.
2. Attenuate the signals from the generator enough to swing the most sensitive range of the output meter.
3. Use a non-metallic alignment tool.
4. Repeat adjustments to insure good results.
5. Set the function selector switch (SW10) to "radio" position.

AM RF ALIGNMENT

(Refer to Figure 18–2)

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
			CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	MW	IF	Refer to Figure 15–1.	Exactly 455 kHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Adjust for best "IF" curve	Adjust the AM IF transformers. (T101) (T102)
2	LW	Band Coverage	Refer to Figure 15–2.	Exactly 145 kHz. (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity)	Adjust for maximum output.	Adjust the LW oscillation coil (L105).
3	LW		Same as step 2.	Exactly 295 kHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capcity).	Same as step 2.	Adjust the LW oscillation trimmer (TC106).
4	LW	Tracking	Same as step 2.	Exactly 170 kHz. (400 Hz, 30%, AM modulated)	170 kHz	Same as step 2.	Adjust the LW bar antenna coil (L102). See Note A .
5	LW		Same as step 2.	Exactly 270 kHz. (400 Hz, 30%, AM modulated)	270 kHz	Same as step 2.	Adjust the LW antenna trimmer (TC101). See Note A .
6	LW		Repeat steps 2, 3, 4, and 5 until no further improvement can be made.				
7	MW	Band Coverage	Same as step 2.	Exactly 510 kHz. (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity)	Same as step 2.	Adjust the MW oscillation coil (L104).
8	MW		Same as step 2.	Exactly 1650 khz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the MW oscillation trimmer (TC105).
9	MW	Tracking	Same as step 2.	Exactly 600 kHz. (400 Hz, 30%, AM modulated)	600 kHz	Same as step 2.	Adjust the MW bar antenna coil (L102). See Note A .
10	MW		Same as step 2.	Exactly 1400 kHz. (400 Hz, 30%, AM modulated)	1400 kHz	Same as step 2.	Adjust the MW antenna trimmer (TC102).
11	MW		Repeat steps 7, 8, 9 and 10 until no further improvement can be made.				
12	SW	Band Coverage	Refer to Figure 15–3.	Exactly 5.85 MHz. (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity)	Same as step 2.	Adjust the SW oscillation coil (L103).
13	SW		Same as step 12.	Exactly 18.5 MHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the SW oscillation trimmer (TC104).
14	SW	Tracking	Same as step 12.	Exactly 6.5 MHz (400 Hz, 30%, AM modulated)	6.5 MHz	Same as step 2.	Adjust the SW antenna coil (L101).
15	SW		Same as step 12.	Exactly 16 MHz. (400 Hz, 30%, AM modulated)	16 MHz	Same as step 2.	Adjust the SW antenna trimmer (TC103).
16	SW		Repeat steps 12, 13, 14 and 15 until no further improvement can be made.				

Note A Check the alignment of the receiver antenna coil by bringing a piece of ferrite (such as a coil slug) near the antenna loop stick, then a piece of brass. If ferrite increases output, loop requires more inductance. If brass increases output, loop requires less inductance. Change loop inductance by sliding the bobbin toward the center of ferrite core to increase inductance, or away to decrease inductance.

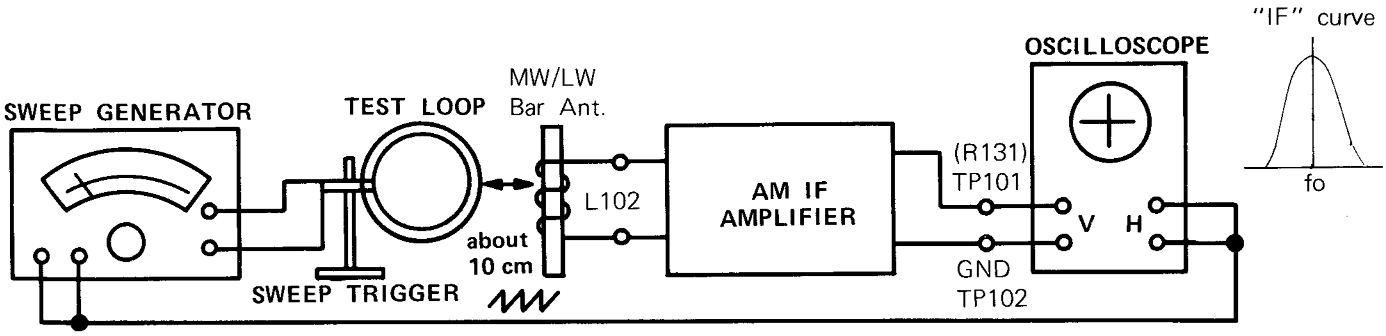

"IF" curve
OSCILLOSCOPE
MW/LW
Bar Ant.
SWEEP GENERATOR
TEST LOOP
L102
AM IF
AMPLIFIER
(R131)
TP101
V
H
fo
about
10 cm
SWEEP TRIGGER
GND
TP102

Figure 15–1 AM IF ALIGNMENT EQUIPMENT CONNECTION

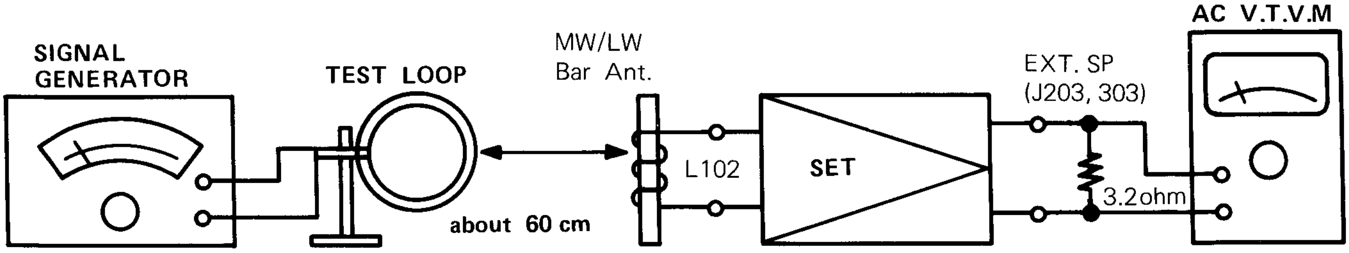

AC V.T.V.M
SIGNAL
GENERATOR
TEST LOOP
MW/LW
Bar Ant.
EXT. SP
(J203, 303)
L102
SET
3.2ohm
about 60 cm

Figure 15–2 MW/LW RF ALIGNMENT EQUIPMENT CONNECTION

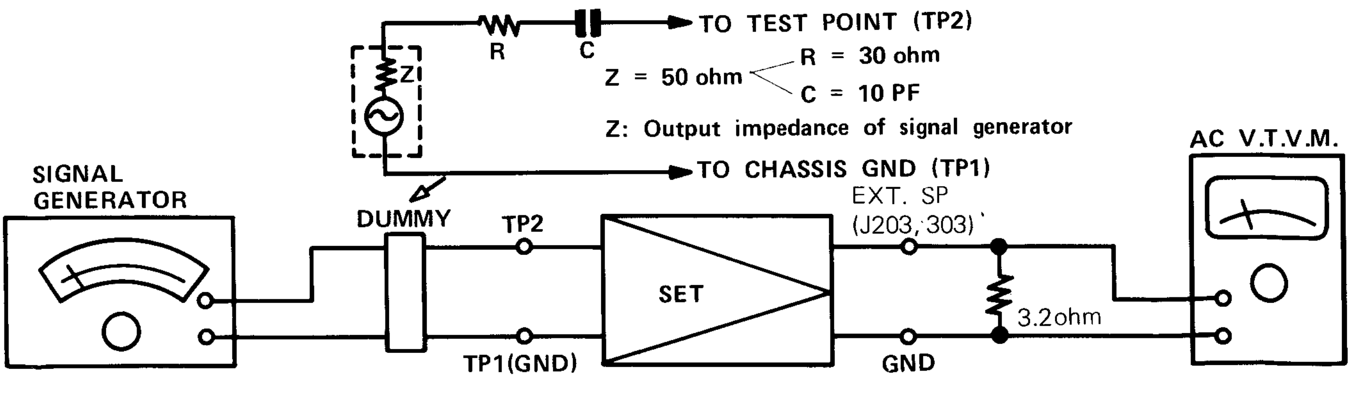

TO TEST POINT (TP2)
R
C
ZI
Z = 50 ohm
R = 30 ohm
C = 10 PF
Z: Output impedance of signal generator
AC V.T.V.M.
SIGNAL
GENERATOR
TO CHASSIS GND (TP1)
EXT. SP
(J203, 303)
DUMMY
TP2
SET
3.2ohm
TP1(GND)
GND

Figure 15–3 SW RF ALIGNMENT EQUIPMENT CONNECTION

THE INSTRUCTION OF FREQUENCY ADJUSTMENT

In order to comply with FTZ rule. Nr. 358/1970, please fix the low end of dial frequency (87.5 MHz) and the high end of dial frequency (107.9 MHz) on FM band, by adjusting oscillation coils (L3 and L4) and oscillation trimmer (TC2), respectively, as illustrated in Figure 18–2.

FM IF/RF ALIGNMENT

* Set the band selector switch (SW101) to "FM" position. (Refer to Figure 18–2)

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
			CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	FM	IF See Note B	Refer to Figure 16–1.	Exactly 10.7 MHz. (400 Hz, 30%, FM modulated)	High end of dial. (minimum capacity)	Adjust for best "S" curve.	Adjust the FM IF transformers. 1. (T1) 2. (T2)
2	FM	Band Coverage	Refer to Figures 16–2 and 17–3.	Exactly 87.1 MHz (400 Hz, 30%, FM modulated)	Low end of dial. (maximum capacity)	Adjust for maximum output.	Adjust the FM oscillation coils (L3, L4).
3			Same as step 2.	Exactly 109 MHz. (400 Hz, 30%, FM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the FM oscillation trimmer (TC2)
4	FM	Tracking	Same as step 2.	Exactly 88 MHz. (400 Hz, 30%, FM modulated)	88 MHz	Same as step 2.	Adjust the FM RF coils (L1, L2).
5			Same as step 2.	Exactly 108 MHz. (400 Hz, 30%, FM modulated)	108 MHz	Same as step 2.	Adjust the FM RF trimmer (TC1).
6	FM	Repeat steps 2, 3, 4 and 5 until no further improvement can be made.					

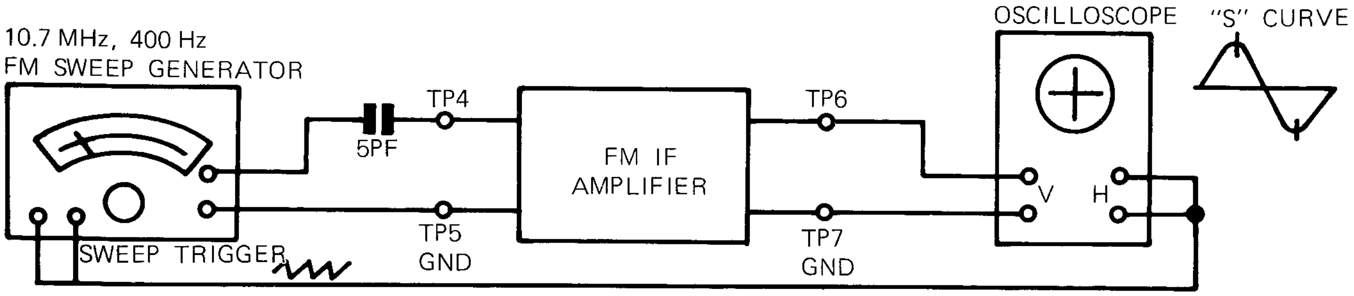

10.7 MHz, 400 Hz
FM SWEEP GENERATOR
5PF
TP4
SWEEP TRIGGER
TP5
GND
FM IF
AMPLIFIER
TP6
TP7
GND
OSCILLOSCOPE
V
H
"S" CURVE

Figure 16–1 FM IF ALIGNMENT EQUIPMENT CONNECTION

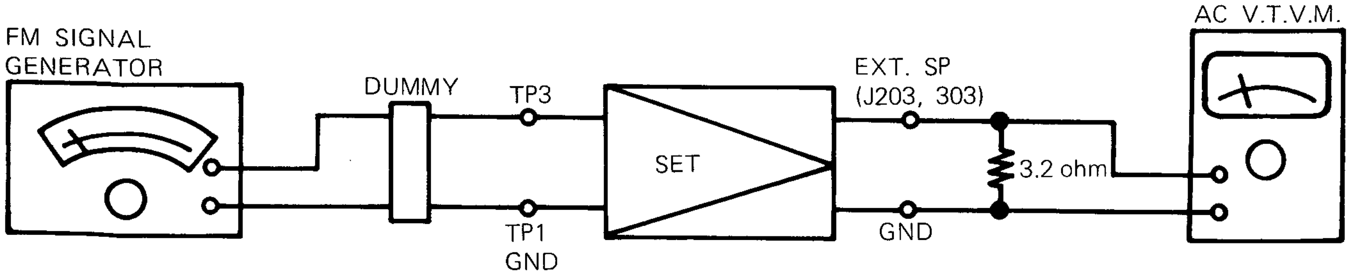
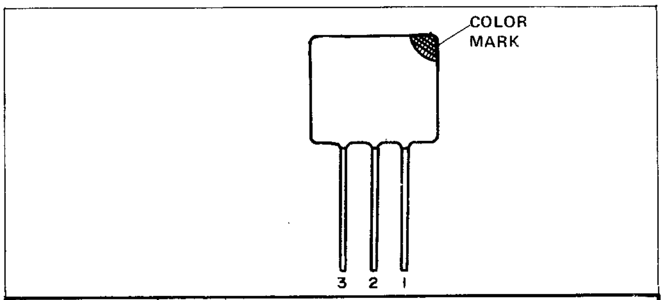

FM SIGNAL
GENERATOR
DUMMY
TP3
TP1
GND
SET
EXT. SP
(J203, 303)
GND
3.2 ohm
AC V.T.V.M.

Figure 16–2 FM RF ALIGNMENT EQUIPMENT CONNECTION

Note B

There are 5 kinds of ceramic filters (CF1, CF2) available with this unit and they are given color indication as tabulated below to differentiate the central frequency from one to another among them. When using them, be sure to make the two of the same type a pair.

When other ceramic filters than the one (red) having the central frequency of 10.7 MHz are used, note that a marker (10.7 MHz) of FM sweep generator, if used, will be deviated -- therefore, adjust the generator by putting off the marker.


COLOR MARK
3
2
1

Central frequency (fo)	D	Black:	10.64 MHz ± 30 kHz
	B	Blue:	10.67 MHz ± 30 kHz
	A	Red:	10.70 MHz ± 30 kHz
	C	Orange:	10.73 MHz ± 30 kHz
	E	White:	10.76 MHz ± 30 kHz

Figure 17–1

FM STEREO ALIGNMENT

* Set the band selector switch (SW101) to "FM" position.

STEP	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
	CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	Refer to Figures 17–2 and 17–3.	Exactly 98 MHz (54 dB) un modulated.	98 MHz	Adjust for 19 ±0.1 kHz.	Adjust the semi-variable resister (R34).

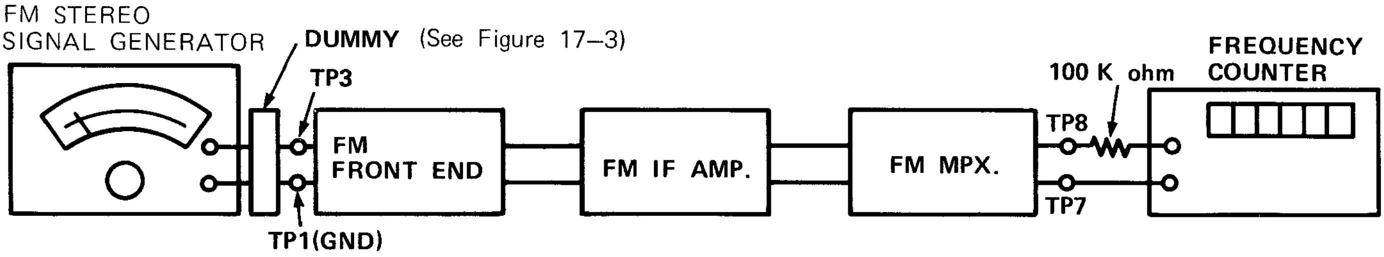
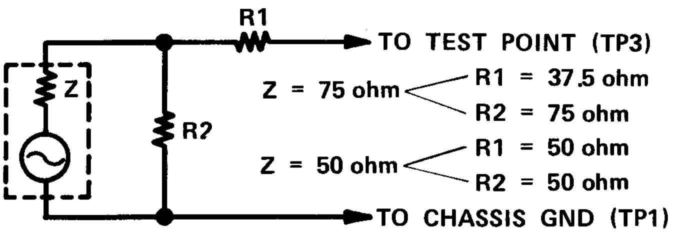

FM STEREO SIGNAL GENERATOR
DUMMY (See Figure 17–3)
TP3
FM FRONT END
TP1(GND)
FM IF AMP.
FM MPX.
TP8
TP7
100 K ohm
FREQUENCY COUNTER

Figure 17–2


R1
TO TEST POINT (TP3)
Z
R2
Z = 75 ohm
R1 = 37.5 ohm
R2 = 75 ohm
Z = 50 ohm
R1 = 50 ohm
R2 = 50 ohm
TO CHASSIS GND (TP1)

Z: Output impedance of signal generator

Figure 17–3 FM DUMMY

CHECKING OF THE LEVEL IN WHICH THE FM STEREO INDICATOR CAN LIGHT UP. (See Fig. 18–1)

(1) Set the function selector switch (SW101) at "radio" and the band selector switch (SW1) at "FM" position, respectively.

(2) Adjust the signal generator to produce a signal of 98 MHz (19 kHz, 10% FM modulated), and allow the set to tune in that signal.

(3) Set the output of signal generator at 0 dB, then increase it gradually until the FM stereo indicator (D11) will light up. See that the indicator can light up as far as that output is within the range from 4 dB to 20 dB.

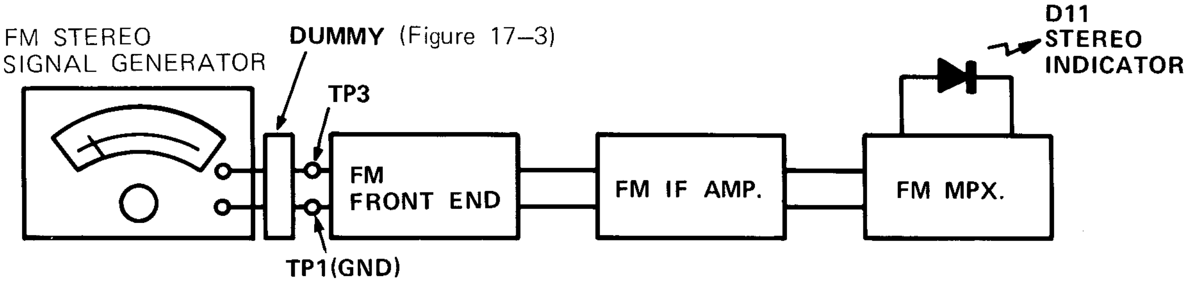

FM STEREO
SIGNAL GENERATOR
DUMMY (Figure 17–3)
TP3
FM
FRONT END
FM IF AMP.
FM MPX.
D11
STEREO
INDICATOR
TP1(GND)

Figure 18–1

ALIGNMENT POINTS (TUNER)

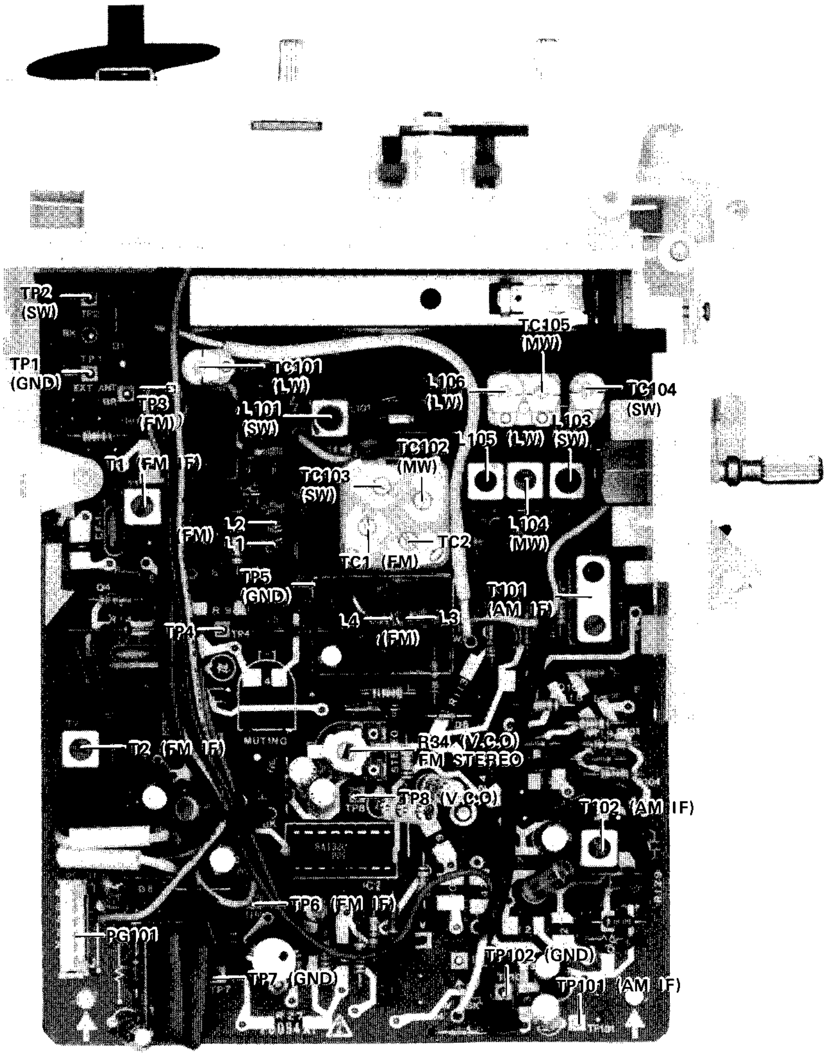

TP2
(SW)
TP1
(GND)
TP3
(FM)
TC101
(LW)
L101
(SW)
T1 (FM IF)
L106
(LW)
TC105
(MW)
TC104
(SW)
L105 (LW)
L103 (SW)
TC102
(MW)
TC103
(SW)
L2
L1
(FM)
TC2
TC1 (FM)
L104
(MW)
TP5
(GND)
T101
(AM IF)
L4
L3
(FM)
TP4
T2 (FM IF)
R34 (V.C.O)
FM STEREO
TP8 (V.C.O)
T102 (AM IF)
TP6 (FM IF)
PG101
TP7 (GND)
TP102 (GND)
TP101 (AM IF)

Figure 18–2

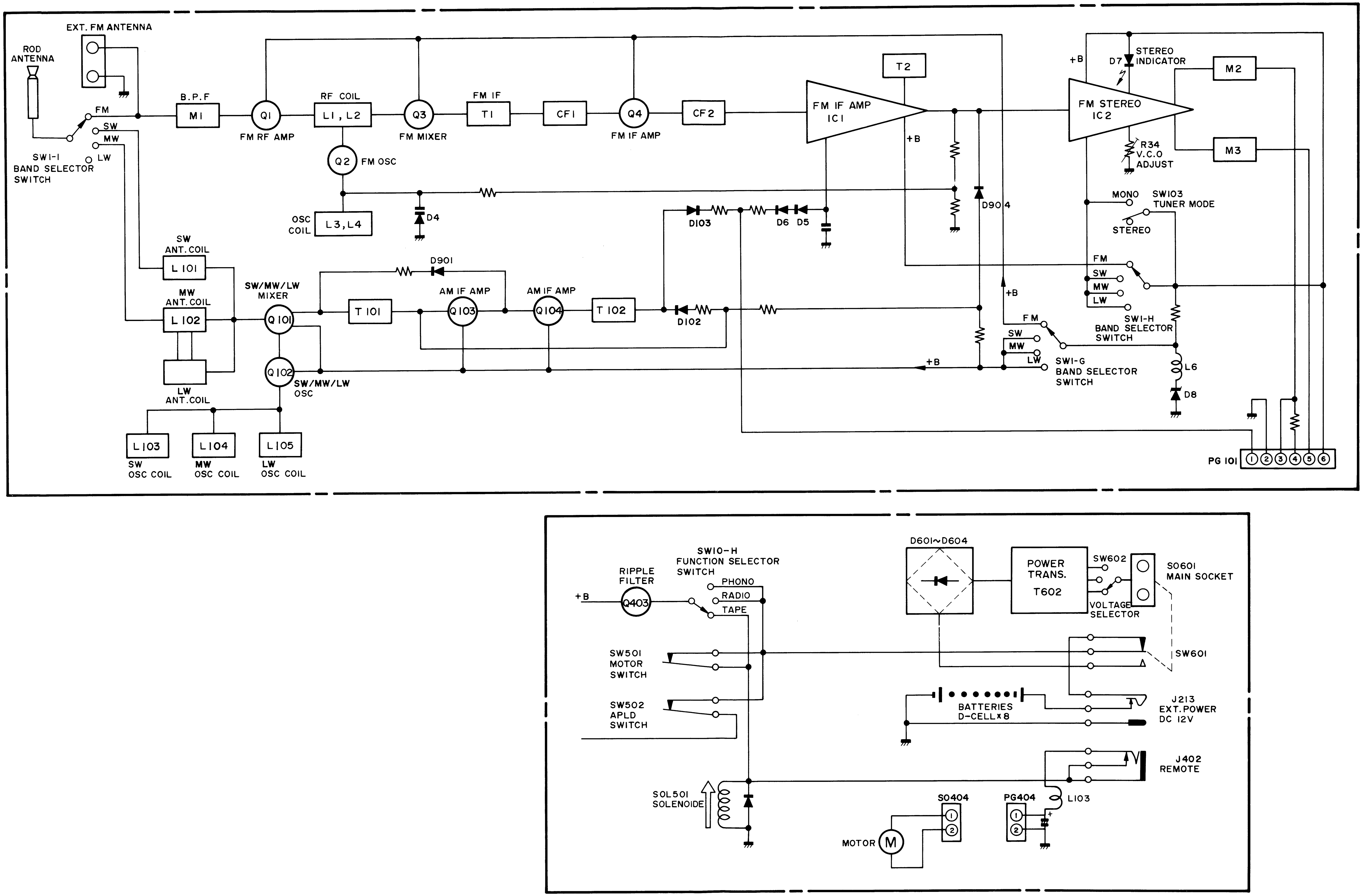

EXT. FM ANTENNA
ROD ANTENNA
FM
SW
MW
LW
SW1-1 BAND SELECTOR SWITCH
B.P.F
M1
Q1
FM RF AMP
RF COIL
L1, L2
Q2
FM OSC
OSC COIL
L3, L4
D4
Q3
FM MIXER
FM IF
T1
CF1
Q4
FM IF AMP
CF2
T2
FM IF AMP IC1
+B
D103
D6
D5
D904
+B
D7
STEREO INDICATOR
FM STEREO IC2
M2
M3
R34 V.C.O ADJUST
MONO
SW103 TUNER MODE
STEREO
FM
SW
MW
LW
SW1-H BAND SELECTOR SWITCH
SW ANT. COIL
L101
MW ANT. COIL
L102
LW ANT. COIL
SW/MW/LW MIXER
Q101
Q102
SW/MW/LW OSC
D901
T101
AM IF AMP
Q103
AM IF AMP
Q104
T102
D102
+B
+B
FM
SW
MW
LW
SW1-G BAND SELECTOR SWITCH
L6
D8
L103
SW OSC COIL
L104
MW OSC COIL
L105
LW OSC COIL
PG 101
①②③④⑤⑥
+B
RIPPLE FILTER
Q403
SW10-H FUNCTION SELECTOR SWITCH
PHONO
RADIO
TAPE
SW501 MOTOR SWITCH
SW502 APLD SWITCH
SOL501 SOLENOIDE
D601~D604
POWER TRANS. T602
SW602
VOLTAGE SELECTOR
SO601 MAIN SOCKET
SW601
BATTERIES D-CELL x 8
J213 EXT. POWER DC 12V
J402 REMOTE
L103
SO404
①
②
PG404
①
②
MOTOR
M

Figure 19 BLOCK DIAGRAM (TUNER SECTION)

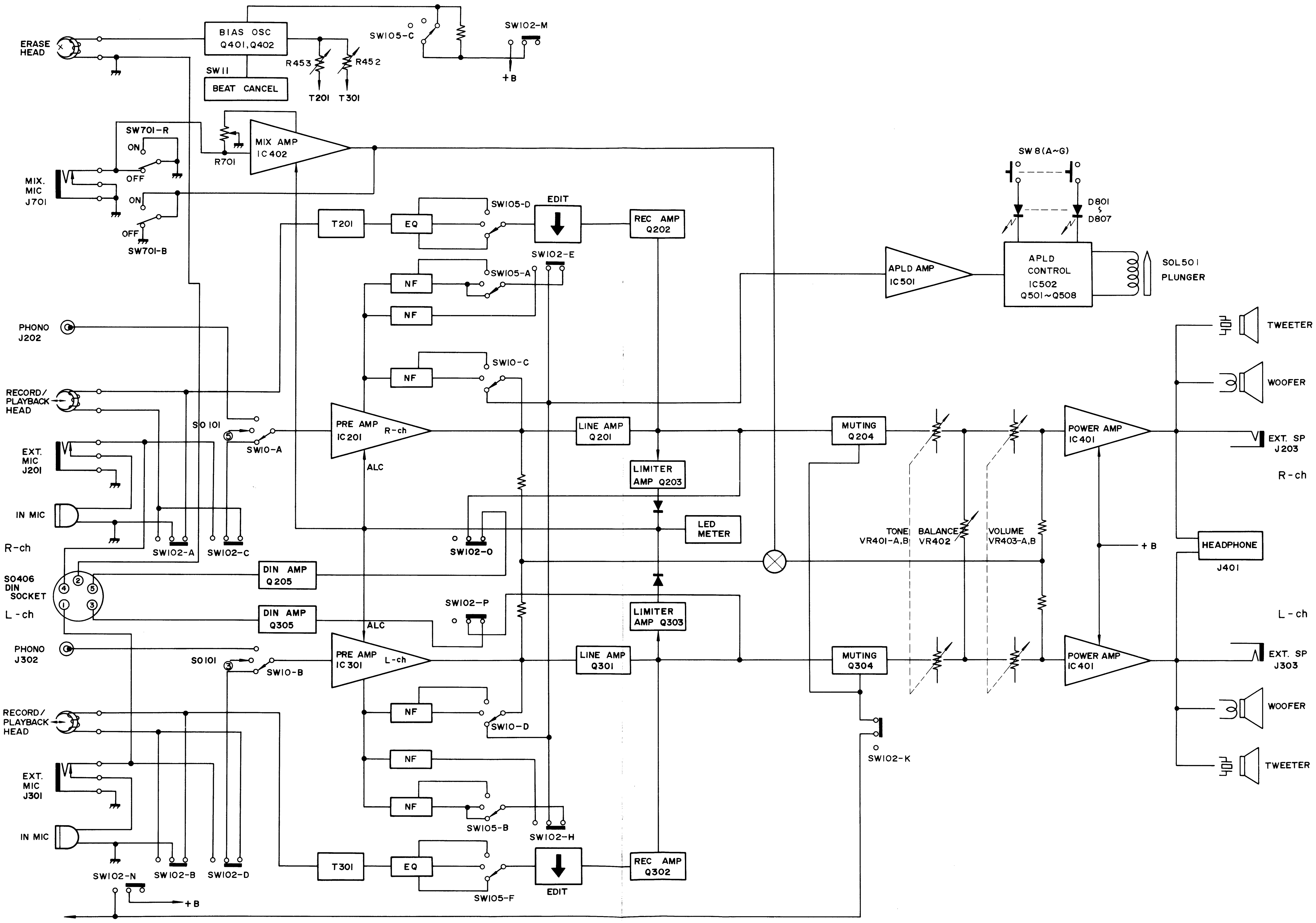

ERASE HEAD
BIAS OSC
Q401,Q402
SW11
BEAT CANCEL
R453
R452
T201
T301
SW105-C
SW102-M
+B
SW701-R
ON
OFF
MIX. MIC J701
ON
OFF
SW701-B
R701
MIX AMP
IC402
T201
EQ
SW105-D
EDIT
REC AMP
Q202
SW102-E
NF
SW105-A
NF
NF
SW10-C
SW 8(A~G)
D801
D807
APLD AMP
IC501
APLD CONTROL
IC502
Q501~Q508
SOL501
PLUNGER
TWEETER
WOOFER
PHONO J202
RECORD/PLAYBACK HEAD
S0101
⑤
SW10-A
PRE AMP
IC201
R-ch
ALC
LINE AMP
Q201
LIMITER AMP Q203
MUTING
Q204
POWER AMP
IC401
EXT. SP
J203
R-ch
EXT. MIC J201
IN MIC
R-ch
SW102-A
SW102-C
SW102-O
LED METER
TONE
VR401-A,B
BALANCE
VR402
VOLUME
VR403-A,B
+B
HEADPHONE
J401
S0406 DIN SOCKET
L-ch
④
②
⑤
①
③
DIN AMP
Q205
DIN AMP
Q305
SW102-P
ALC
LIMITER AMP Q303
L-ch
PHONO J302
S0101
③
SW10-B
PRE AMP
IC301
L-ch
LINE AMP
Q301
MUTING
Q304
POWER AMP
IC401
EXT. SP
J303
RECORD/PLAYBACK HEAD
NF
SW10-D
SW102-K
WOOFER
EXT. MIC J301
NF
NF
TWEETER
IN MIC
SW105-B
SW102-H
SW102-N
SW102-B
SW102-D
+B
T301
EQ
SW105-F
EDIT
REC AMP
Q302

Figure 21 BLOCK DIAGRAM (AUDIO SECTION)

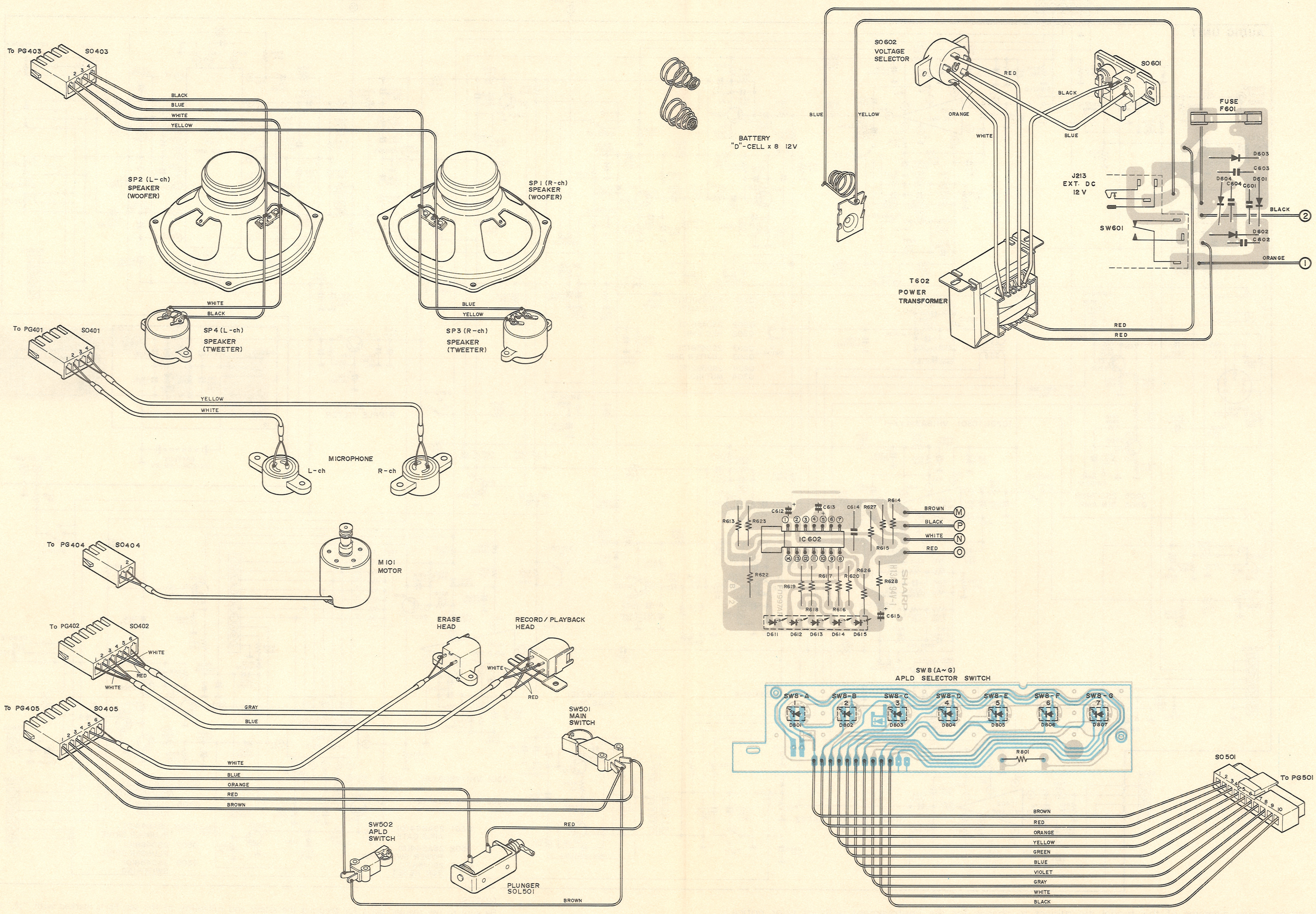
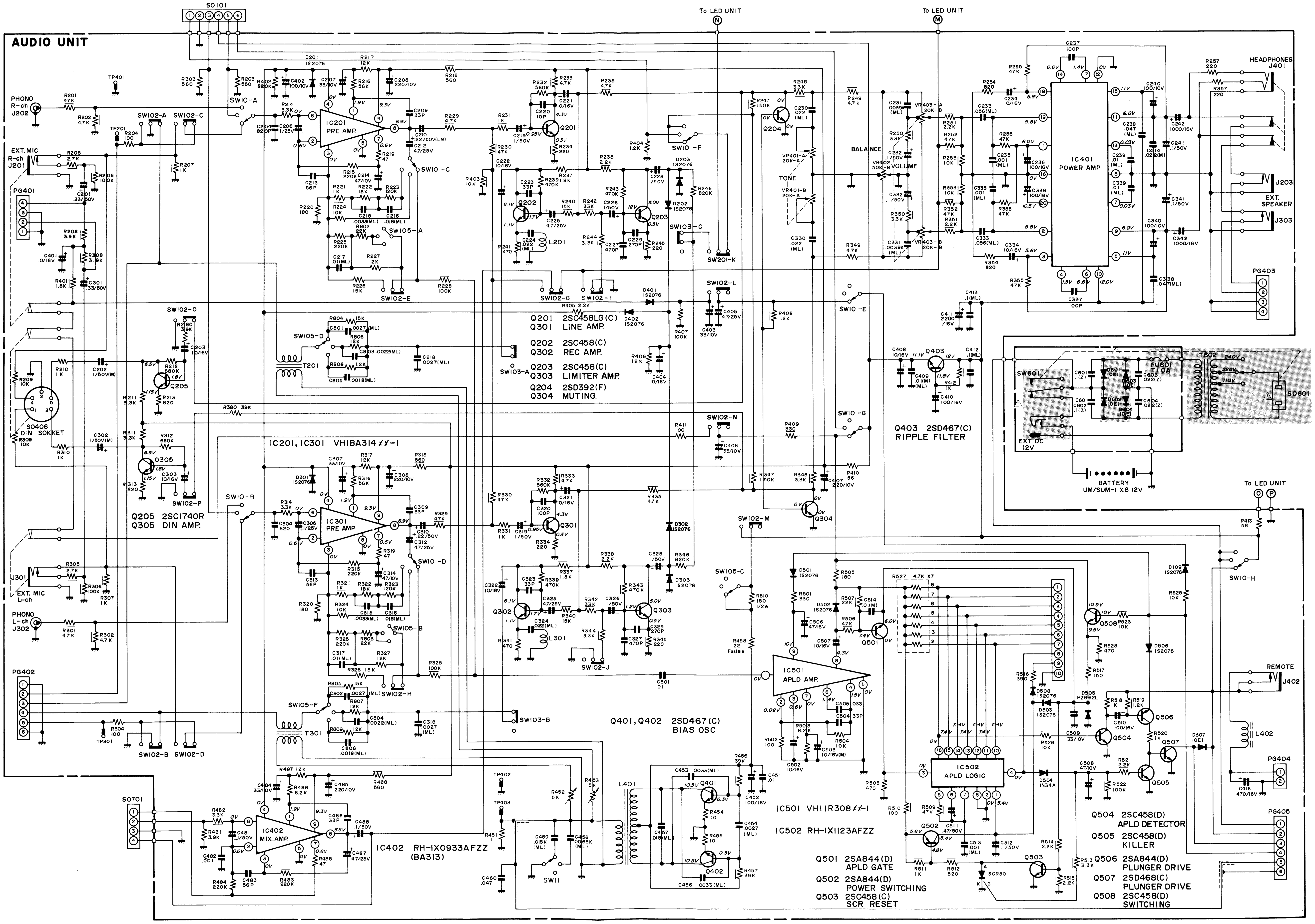

To PG403
S0403
BLACK
BLUE
WHITE
YELLOW
SP2 (L-ch)
SPEAKER
(WOOFER)
SP1 (R-ch)
SPEAKER
(WOOFER)
WHITE
BLACK
BLUE
YELLOW
SP4 (L-ch)
SPEAKER
(TWEETER)
SP3 (R-ch)
SPEAKER
(TWEETER)
To PG401
S0401
YELLOW
WHITE
MICROPHONE
L-ch
R-ch
To PG404
S0404
M101
MOTOR
To PG402
S0402
WHITE
RED
WHITE
ERASE
HEAD
RECORD / PLAYBACK
HEAD
WHITE
RED
GRAY
BLUE
To PG405
S0405
SW501
MAIN
SWITCH
WHITE
BLUE
ORANGE
RED
BROWN
RED
SW502
APLD
SWITCH
PLUNGER
SOL501
BROWN
BATTERY
"D"-CELL x 8 12V
S0602
VOLTAGE
SELECTOR
S0601
RED
BLACK
BLUE
YELLOW
ORANGE
WHITE
BLUE
FUSE
F601
D603
C603
D604
C604
C601
D601
J213
EXT. DC
12 V
BLACK
②
SW601
D602
C602
ORANGE
①
T602
POWER
TRANSFORMER
RED
RED
C612
C613
C614
R627
R614
R613
R623
IC 602
R615
R622
R619
R617
R620
R626
R628
R618
R616
C615
D611
D612
D613
D614
D615
SHARP
BROWN Ⓜ
BLACK Ⓟ
WHITE Ⓝ
RED Ⓞ
SW8 (A~G)
APLD SELECTOR SWITCH
SW8-A
SW8-B
SW8-C
SW8-D
SW8-E
SW8-F
SW8-G
D801
D802
D803
D804
D805
D806
D807
R801
S0501
To PG501
BROWN
RED
ORANGE
YELLOW
GREEN
BLUE
VIOLET
GRAY
WHITE
BLACK

Figure 23 WIRING SIDE OF P.W. BOARD


AUDIO UNIT
S0101
To LED UNIT Ⓝ
To LED UNIT Ⓜ
To LED UNIT Ⓞ Ⓟ
PHONO R-ch J202
EXT. MIC R-ch J201
PG401
TP401
TP201
SWI02-A
SWI02-C
SWIO-A
IC201 PRE AMP
IC301 PRE AMP
IC402 MIX. AMP
IC401 POWER AMP
IC501 APLD AMP
IC502 APLD LOGIC
S0406 DIN SOKKET
PHONO L-ch J302
EXT. MIC L-ch J301
PG402
TP301
SWI02-B
SWI02-D
S0701
HEADPHONES J401
EXT. SPEAKER J203 J303
PG403
PG404
PG405
REMOTE J402
BALANCE
VOLUME
TONE
T201
T301
L401
L402
SW11
SW601
T602
FU601 T1.0A
S0601
EXT. DC 12V
BATTERY UM/SUM-I X8 12V
Q201 2SC458LG(C) Q301 LINE AMP.
Q202 2SC458(C) Q302 REC AMP.
Q203 2SC458(C) Q303 LIMITER AMP.
Q204 2SD392(F) Q304 MUTING.
Q205 2SC1740R Q305 DIN AMP.
IC201, IC301 VHIBA314//-1
Q401, Q402 2SD467(C) BIAS OSC
Q403 2SD467(C) RIPPLE FILTER
IC402 RH-IX0933AFZZ (BA313)
IC501 VHIIR308//-1
IC502 RH-IXII23AFZZ
Q501 2SA844(D) APLD GATE
Q502 2SA844(D) POWER SWITCHING
Q503 2SC458(C) SCR RESET
Q504 2SC458(D) APLD DETECTOR
Q505 2SC458(D) KILLER
Q506 2SA844(D) PLUNGER DRIVE
Q507 2SD468(C) PLUNGER DRIVE
Q508 2SC458(D) SWITCHING

(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 25 SCHEMATIC DIAGRAM (AUDIO SECTION)

NOTES:
Be sure to use regular parts for securing the safety and reliability of the set. Parts marked with "⚠" and parts cross-hatched (in black) are especially important for maintaining the safety and protecting ability of the set. Be sure to replace them with parts of specified part number.

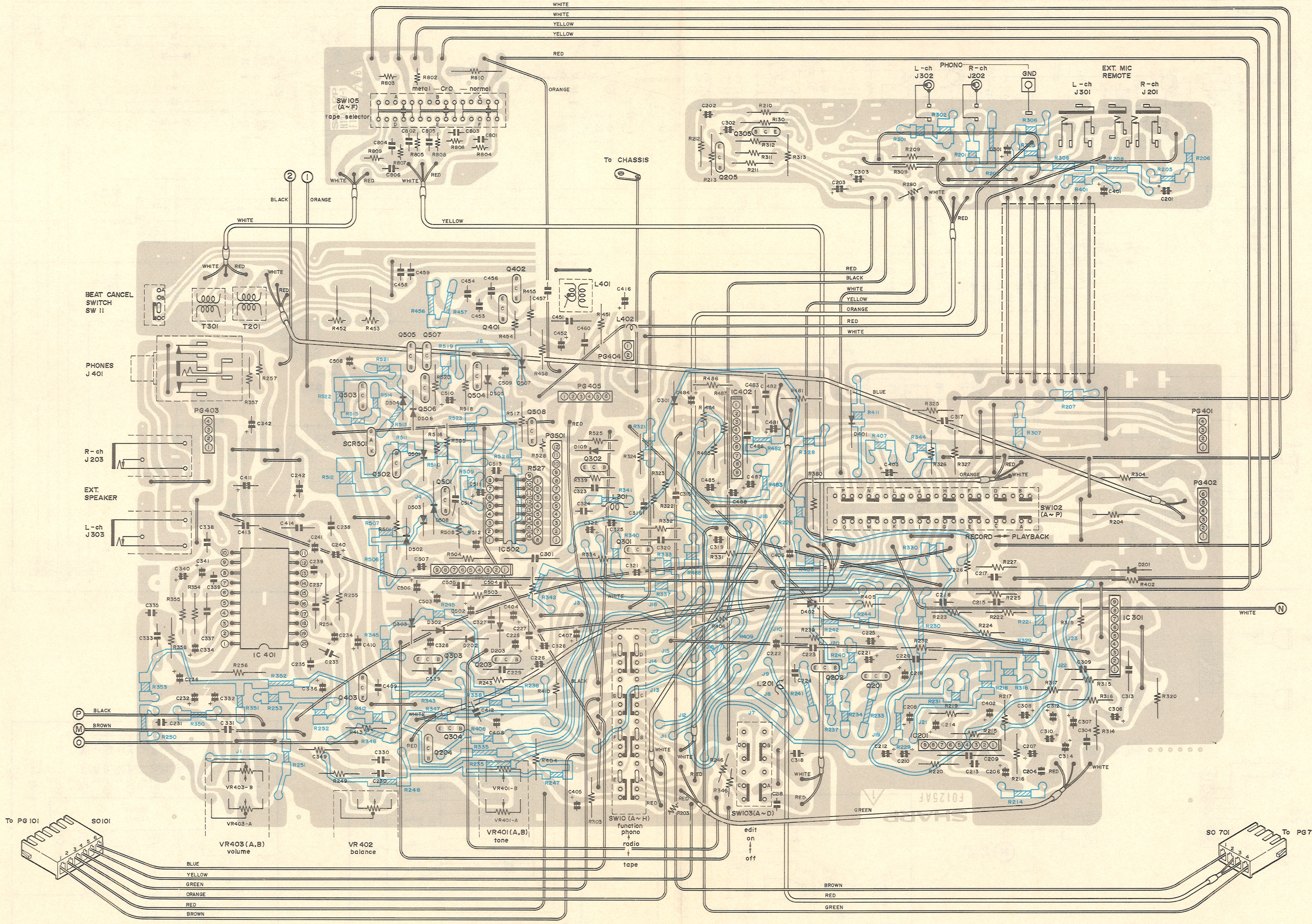
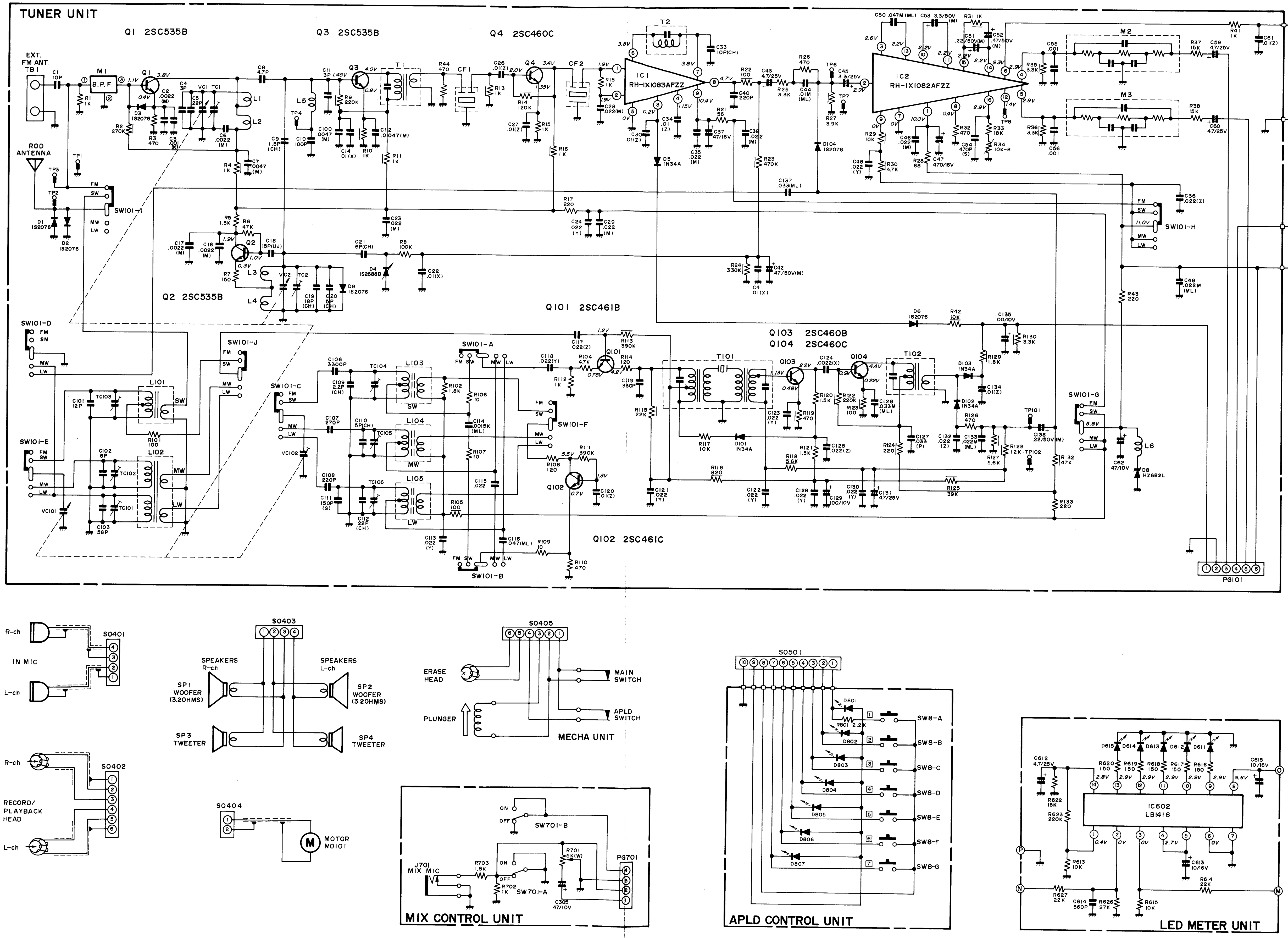

SW105 (A~F) tape selector
metal — CrO — normal
To CHASSIS
PHONO
L-ch J302
R-ch J202
GND
EXT. MIC REMOTE
L-ch J301
R-ch J201
BEAT CANCEL SWITCH SW 11
T301
T201
PHONES J401
PG403
R-ch J203
EXT. SPEAKER
L-ch J303
IC 401
IC502
IC402
IC301
IC201
PG401
PG402
PG404
PG405
PG501
SW102 (A~P)
RECORD → PLAYBACK
SCR501
L401
L402
L201
VR403 (A,B) volume
VR402 balance
VR401 (A,B) tone
SW10 (A~H) function phono radio tape
SW103 (A~D)
edit on off
To PG101
SO101
SO 701
To PG701
WHITE
YELLOW
RED
ORANGE
BLACK
BLUE
GREEN
BROWN
P
M
O
N
F0125AF

Figure 27 WIRING SIDE OF P.W. BOARD (AUDIO SECTION)


TUNER UNIT
Q1 2SC535B
Q2 2SC535B
Q3 2SC535B
Q4 2SC460C
Q101 2SC461B
Q102 2SC461C
Q103 2SC460B
Q104 2SC460C
IC1 RH-IX1083AFZZ
IC2 RH-IX1082AFZZ
EXT. FM ANT. TB1
ROD ANTENNA
B.P.F
CF1
CF2
T1
T2
T101
T102
M2
M3
SW101-A
SW101-B
SW101-C
SW101-D
SW101-E
SW101-F
SW101-G
SW101-H
SW101-J
D11 STEREO INDICATOR
D12 BATTERY INDICATOR
PG101
S0401
IN MIC
R-ch
L-ch
S0402
RECORD/ PLAYBACK HEAD
S0403
SPEAKERS R-ch
SPEAKERS L-ch
SP1 WOOFER (3.2OHMS)
SP2 WOOFER (3.2OHMS)
SP3 TWEETER
SP4 TWEETER
S0404
MOTOR MO101
S0405
ERASE HEAD
PLUNGER
MAIN SWITCH
APLD SWITCH
MECHA UNIT
MIX CONTROL UNIT
J701 MIX MIC
SW701-A
SW701-B
PG701
S0501
SW8-A
SW8-B
SW8-C
SW8-D
SW8-E
SW8-F
SW8-G
APLD CONTROL UNIT
IC602 LB1416
LED METER UNIT

(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 29 SCHEMATIC DIAGRAM (TUNER SECTION)

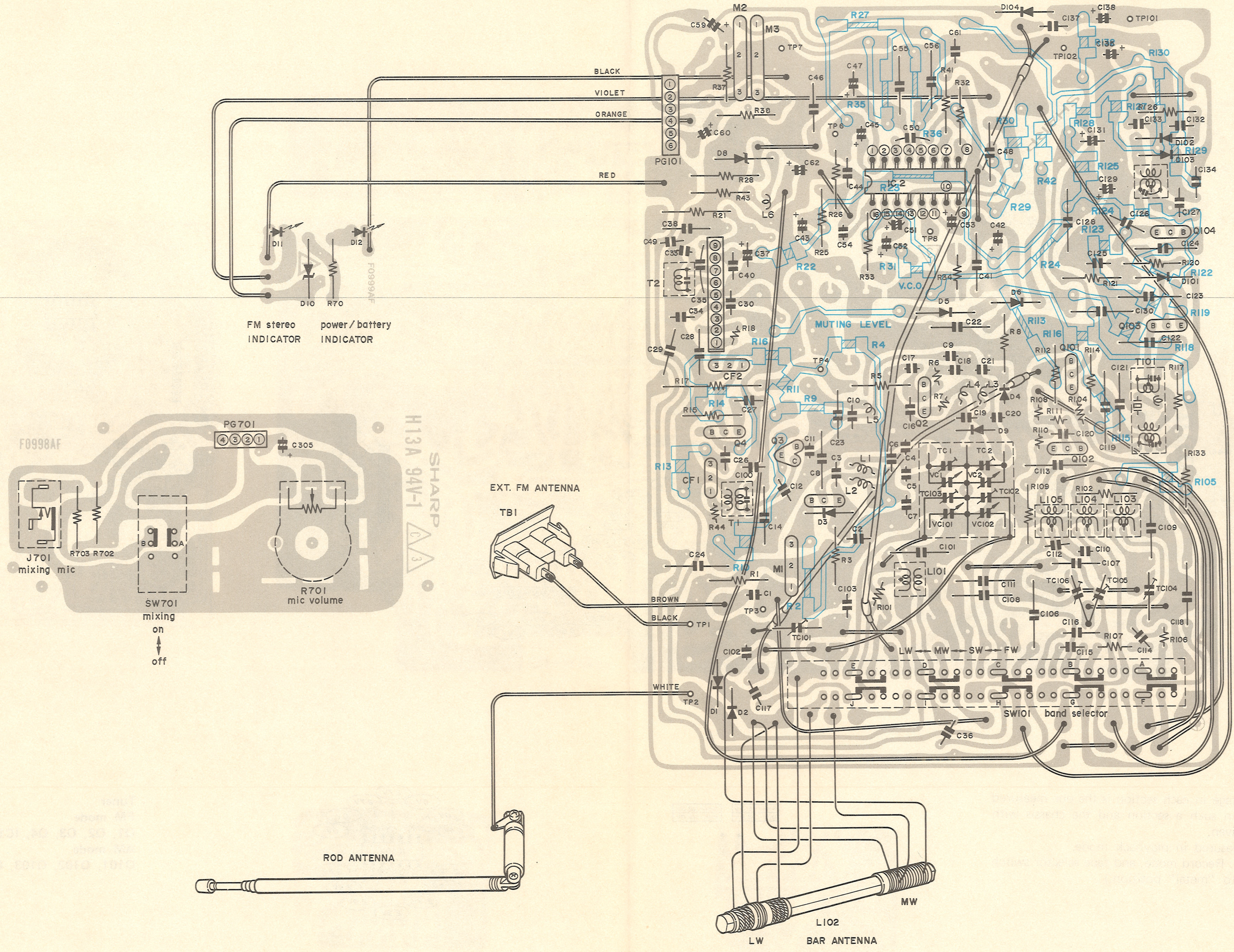
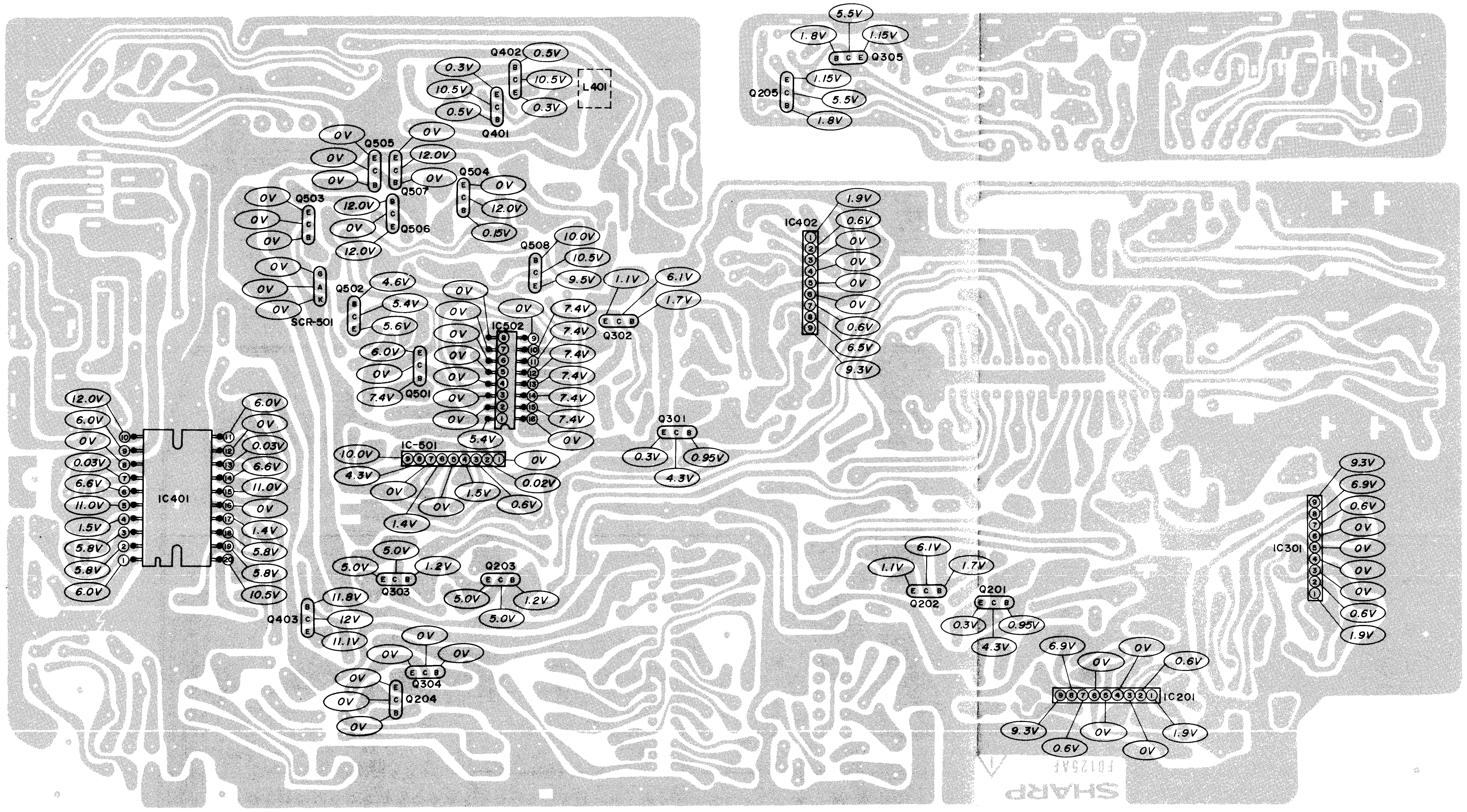
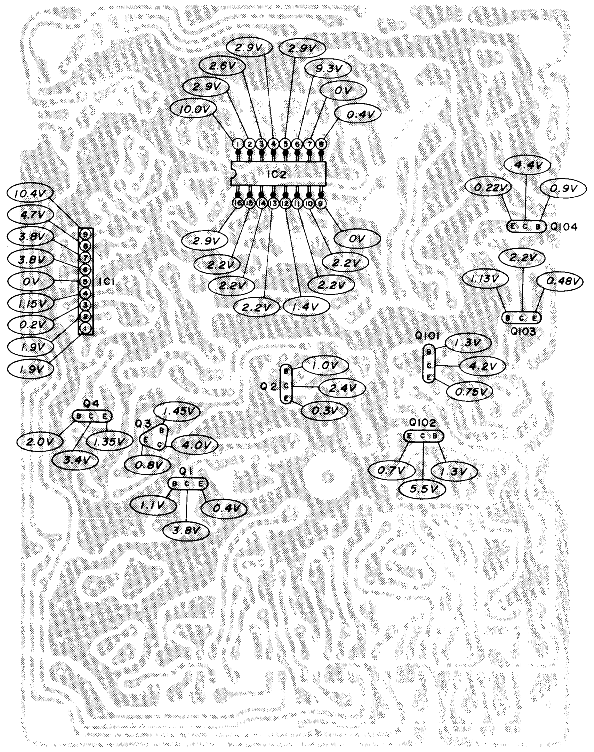

M2
M3
BLACK
VIOLET
ORANGE
RED
PG101
D11
D12
D10
R70
F0999AF
FM stereo INDICATOR
power/battery INDICATOR
PG701
C305
F0998AF
SHARP
H13A 94V-1
J701 mixing mic
R703 R702
SW701 mixing
on
off
R701 mic volume
EXT. FM ANTENNA
TB1
BROWN
BLACK
TP1
WHITE
TP2
ROD ANTENNA
IC2
V.C.O
MUTING LEVEL
CF1
CF2
T1
T2
T101
TC1
TC2
TC101
VC1
VC2
VC101
VC102
L105
L104
L103
L101
Q101
Q102
Q103
Q104
LW
MW
SW
FM
SW101 band selector
C36
L102
BAR ANTENNA
LW
MW

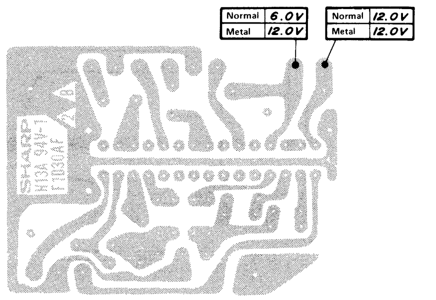
Figure 31 WIRING SIDE OF P.W. BOARD (TUNER SECTION)


Q305
Q205
Q402
Q401
L401
Q505
Q507
Q504
Q503
Q506
Q508
SCR-501
Q502
IC502
Q302
Q501
IC402
IC-501
Q301
IC401
IC301
Q303
Q203
Q202
Q201
Q403
Q304
Q204
IC201
SHARP


IC2
IC1
Q104
Q103
Q101
Q2
Q4
Q3
Q1
Q102

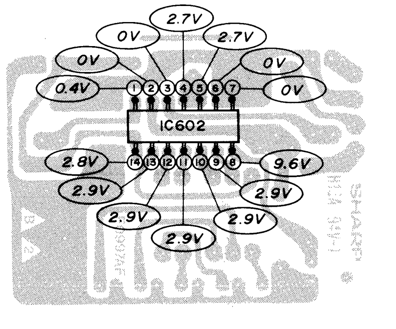
The indicated voltage in each section is the one measured by VTVM between such a section and the chassis with no signal being given.

- Voltages are measured in playback mode.
  (Q401 and Q402: Record mode, and tape selector switch (SW105) is set to "metal" position.)



Normal	6.0V
Metal	12.0V

Normal	12.0V
Metal	12.0V


IC602
2.7V
0V
2.7V
0V
0.4V
0V
0V
2.8V
9.6V
2.9V
2.9V
2.9V
2.9V
2.9V

- **Tuner**
  FM mode
  Q1, Q2, Q3, Q4, IC1, IC2
  AM mode
  Q101, Q102, Q103, Q104

Figure 33 VOLTAGE GUIDE OF P.W. BOARD

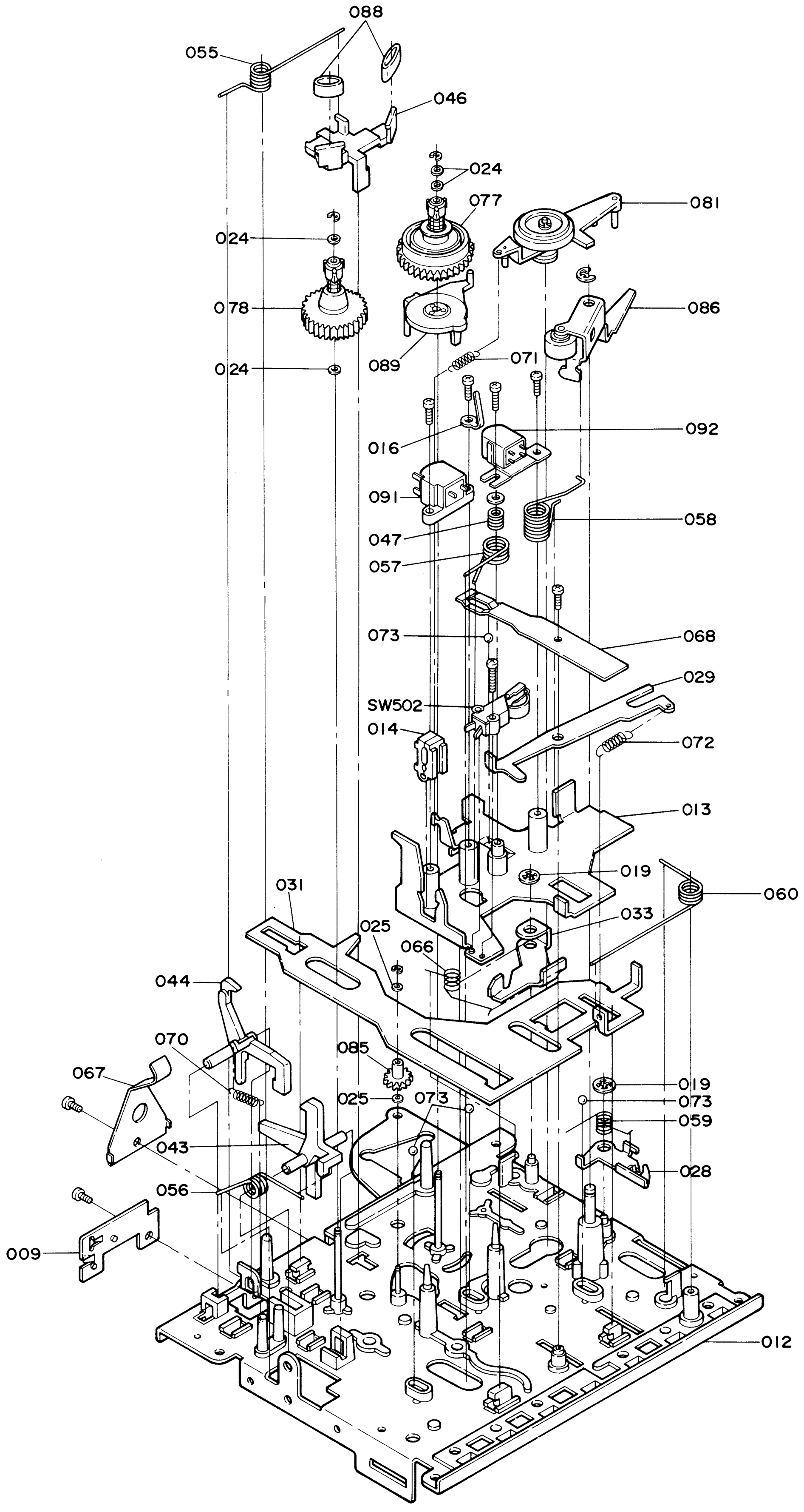

088
055
046
024
077
081
024
078
024
086
089
071
016
092
091
058
047
057
073
068
029
SW502
014
072
013
019
060
031
033
025
066
044
070
067
085
019
025
073
073
059
043
028
056
009
012

Figure 35 MECHANISM EXPLODED TOP VIEW

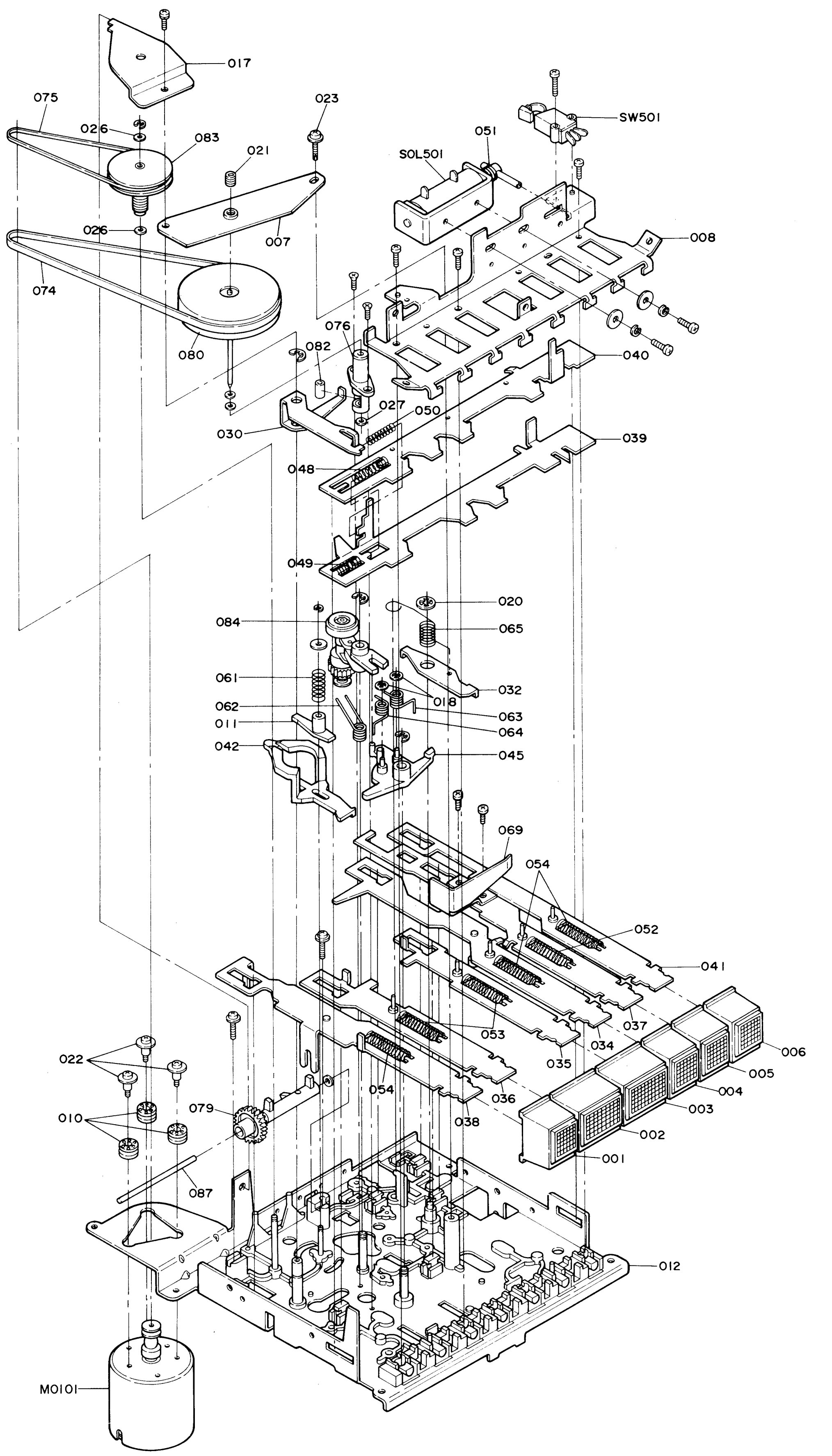

017
075
023
SW501
026
083
021
051
SOL501
026
007
008
074
076
082
080
040
027
050
030
039
048
049
020
084
065
032
061
018
062
063
011
064
042
045
069
054
052
041
006
022
053
037
005
034
035
004
036
003
010
079
054
038
002
001
087
012
M0101

Figure 36 MECHANISM EXPLODED BOTTOM VIEW

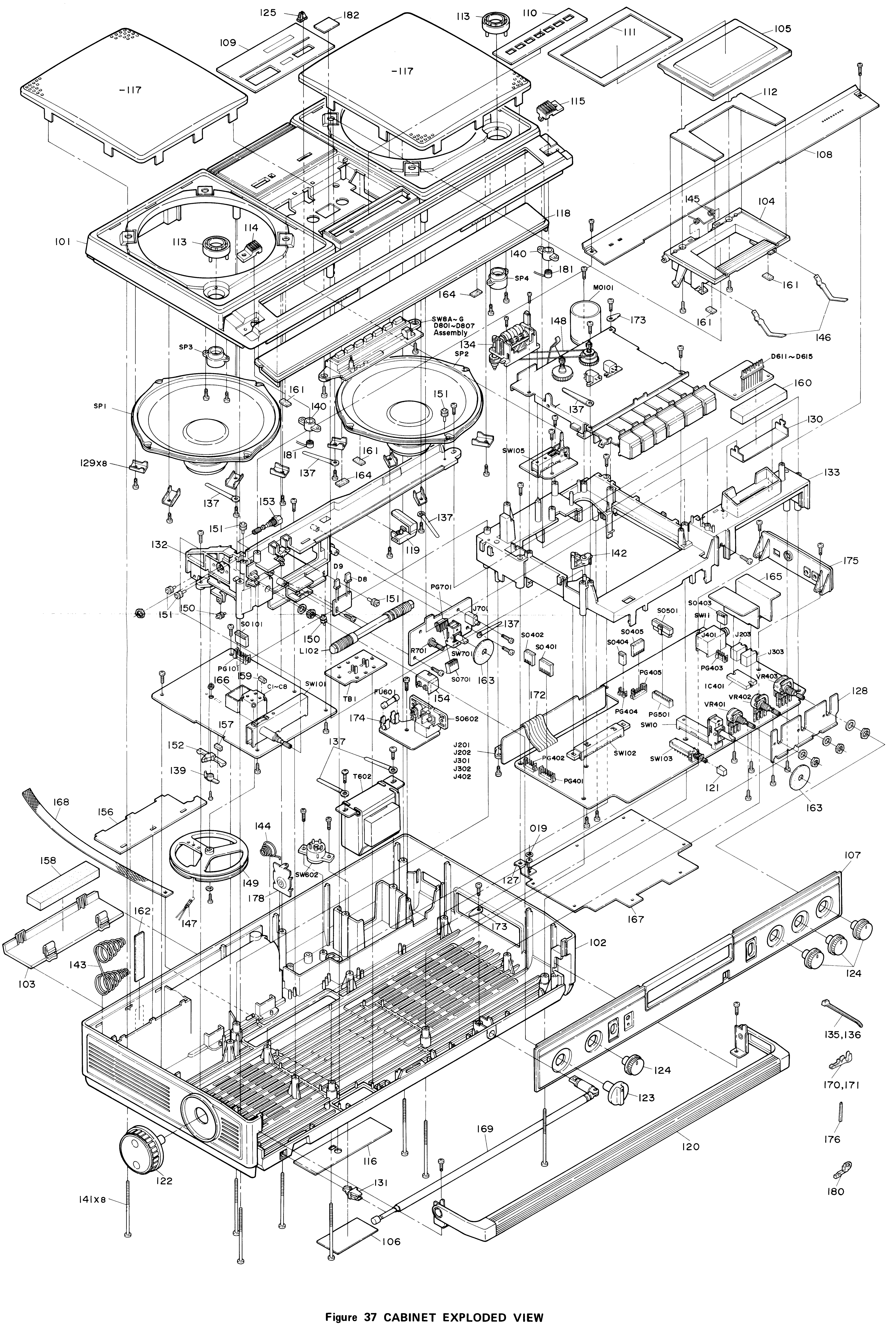
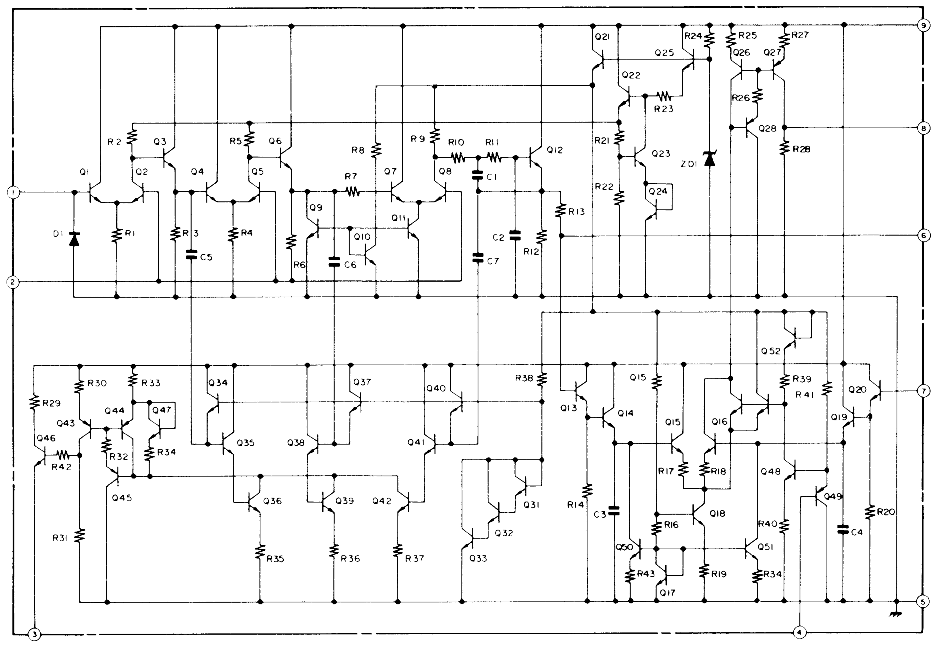

125
182
109
-117
113
110
111
105
-117
115
112
108
118
145
104
101
113
114
140
181
SP4
164
M0101
173
161
161
146
SW8A~G
D801~D807
Assembly
148
134
SP2
SP3
D611~D615
160
SP1
151
161
140
137
130
129x8
181
137
161
164
SW105
133
137
153
137
151
119
132
142
175
D9
D8
PG701
151
J701
165
151
150
137
S0403
S0501
SW11
J401
J203
S0101
150
S0402
S0405
S0404
S0401
J303
L102
R701
SW701
PG405
PG403
PG101
159
166
C1~C8
SW101
TB1
FU601
S0701
163
IC401
VR403
VR402
VR401
128
172
154
PG404
PG501
SW10
174
S0602
157
152
137
J201
J202
J301
J302
J402
PG402
SW102
SW103
PG401
121
139
163
168
156
T602
144
019
107
158
149
SW602
178
127
147
167
173
162
143
103
102
124
135,136
124
170,171
123
169
176
120
116
122
131
180
141x8
106

Figure 37 CABINET EXPLODED VIEW

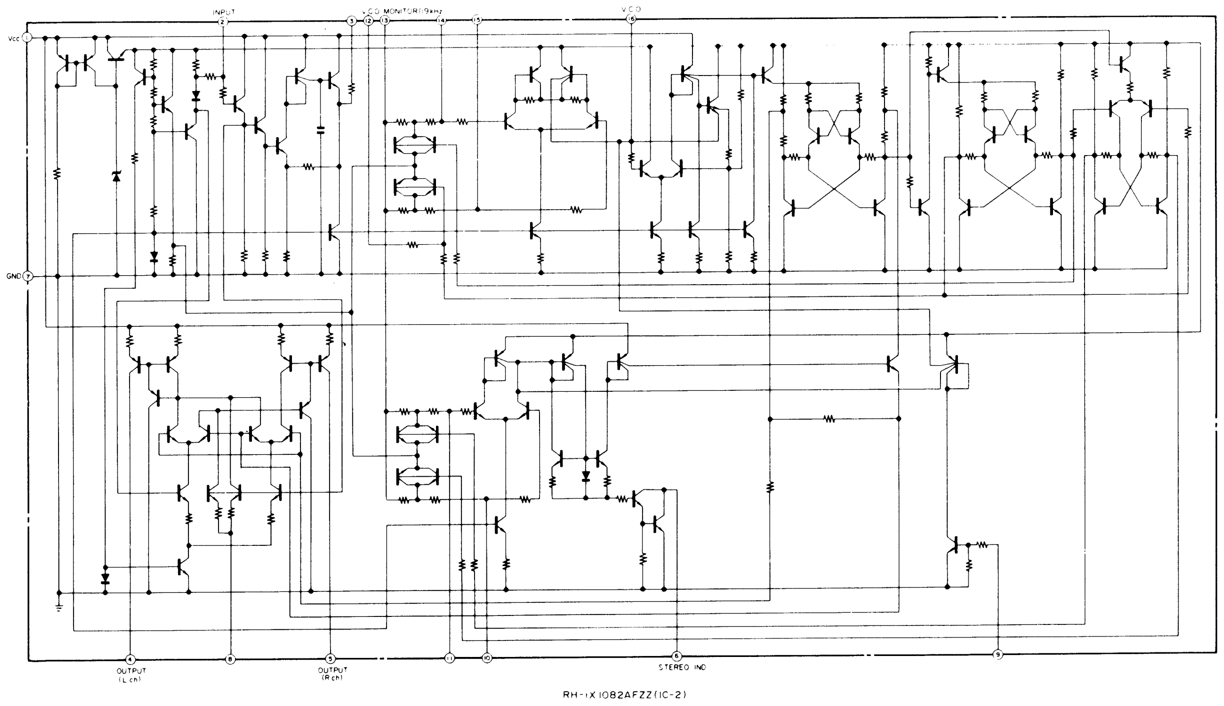
RH-IX1083AFZZ(TA7303P)



1
2
3
4
5
6
7
8
9
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q31
Q32
Q33
Q34
Q35
Q36
Q37
Q38
Q39
Q40
Q41
Q42
Q43
Q44
Q45
Q46
Q47
Q48
Q49
Q50
Q51
Q52
D1
ZD1
R1
R2
R 3
R4
R5
R6
R7
R8
R 9
R10
R11
R12
R13
R14
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R 33
R31
R32
R34
R35
R 36
R 37
R38
R39
R 41
R40
R42
R43
R34
C1
C2
C3
C4
C5
C6
C7

Figure 39–1 EQUIVALENT OF INTEGRATED CIRCUIT (IC1)

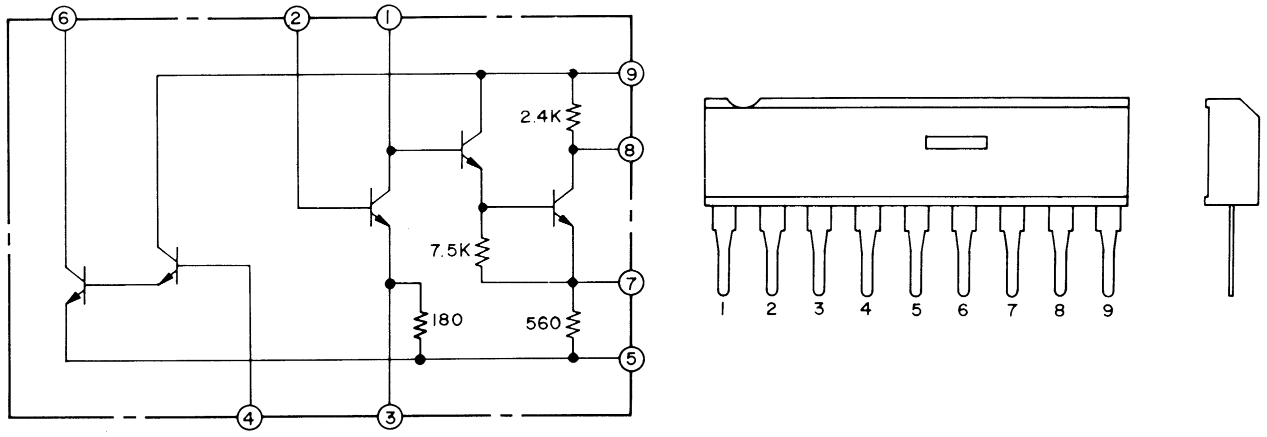
RH-IX1082AFZZ(BA1320)



Vcc
1
INPUT
2
3
V.C.O. MONITOR(19kHz)
12
13
14
15
V.C.O.
16
GND
7
4
OUTPUT (L ch)
8
5
OUTPUT (R ch)
11
10
6
STEREO IND
9
RH-IX1082AFZZ(IC-2)

Figure 39–2 EQUIVALENT OF INTEGRATED CIRCUIT (IC2)

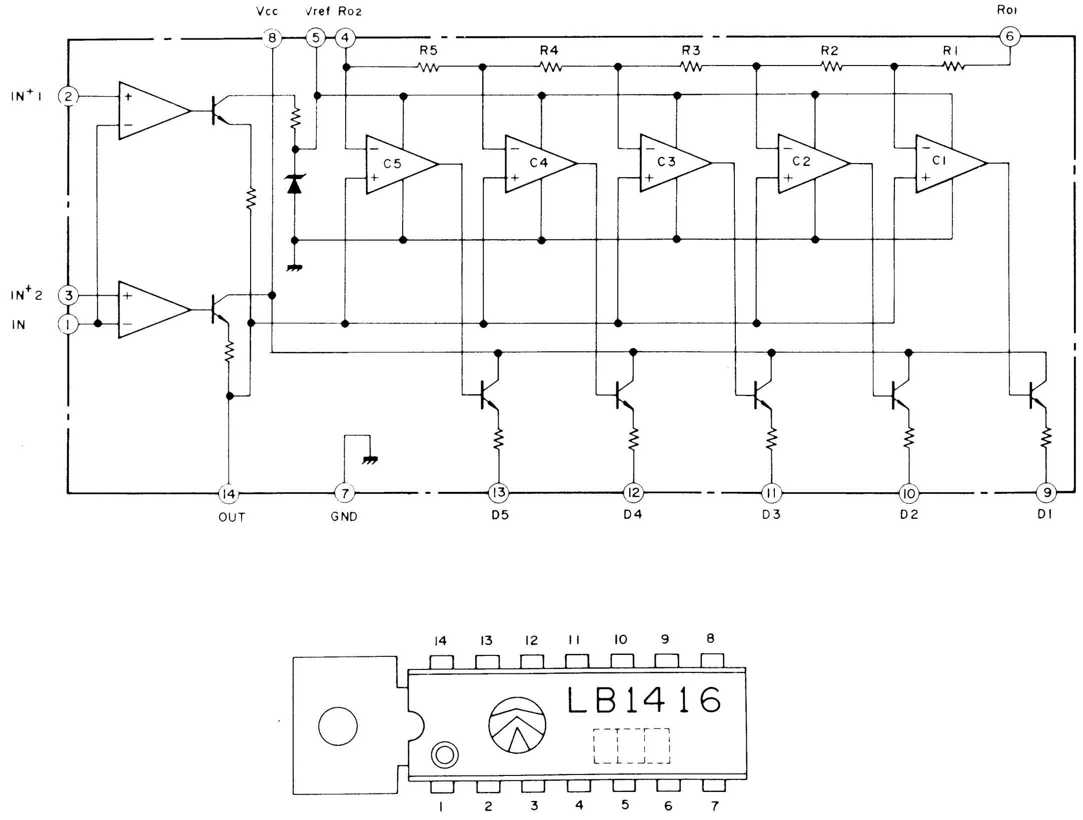
RH–IX0933AFZZ(BA313)



6
2
1
9
8
7
5
4
3
2.4K
7.5K
180
560
1
2
3
4
5
6
7
8
9

Figure 40–1 EQUIVALENT OF INTEGRATED CIRCUIT (IC301)

VHILB1416//–1(LB1416)



Vcc
Vref
Ro2
Ro1
8
5
4
6
R5
R4
R3
R2
R1
IN+1
2
IN+2
3
IN
1
C5
C4
C3
C2
C1
14
OUT
7
GND
13
D5
12
D4
11
D3
10
D2
9
D1
14
13
12
11
10
9
8
LB1416
1
2
3
4
5
6
7

Figure 40–2 EQUIVALENT OF INTEGRATED CIRCUIT (IC602)

VHIIR3108//−1 (IR3108)

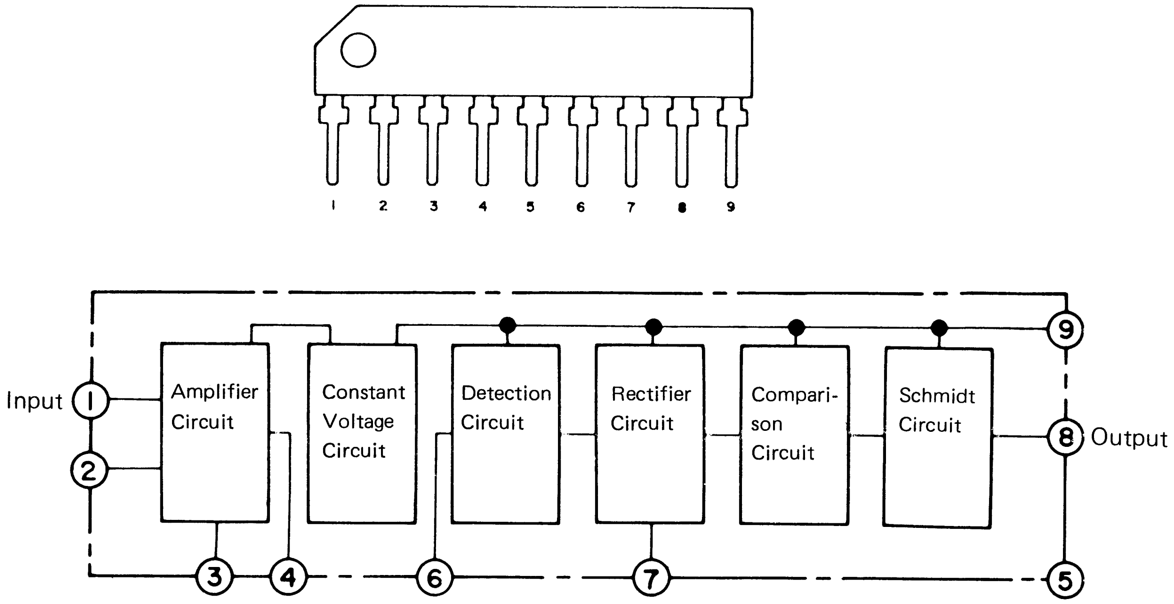
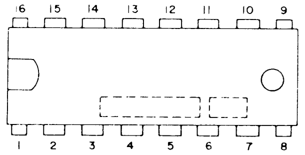

1
2
3
4
5
6
7
8
9
Input
Amplifier Circuit
Constant Voltage Circuit
Detection Circuit
Rectifier Circuit
Comparison Circuit
Schmidt Circuit
Output

Figure 41–1 EQUIVALENT OF INTEGRATED CIRCUIT (IC501)

RH−IX1123AFZZ(M54832P)


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8

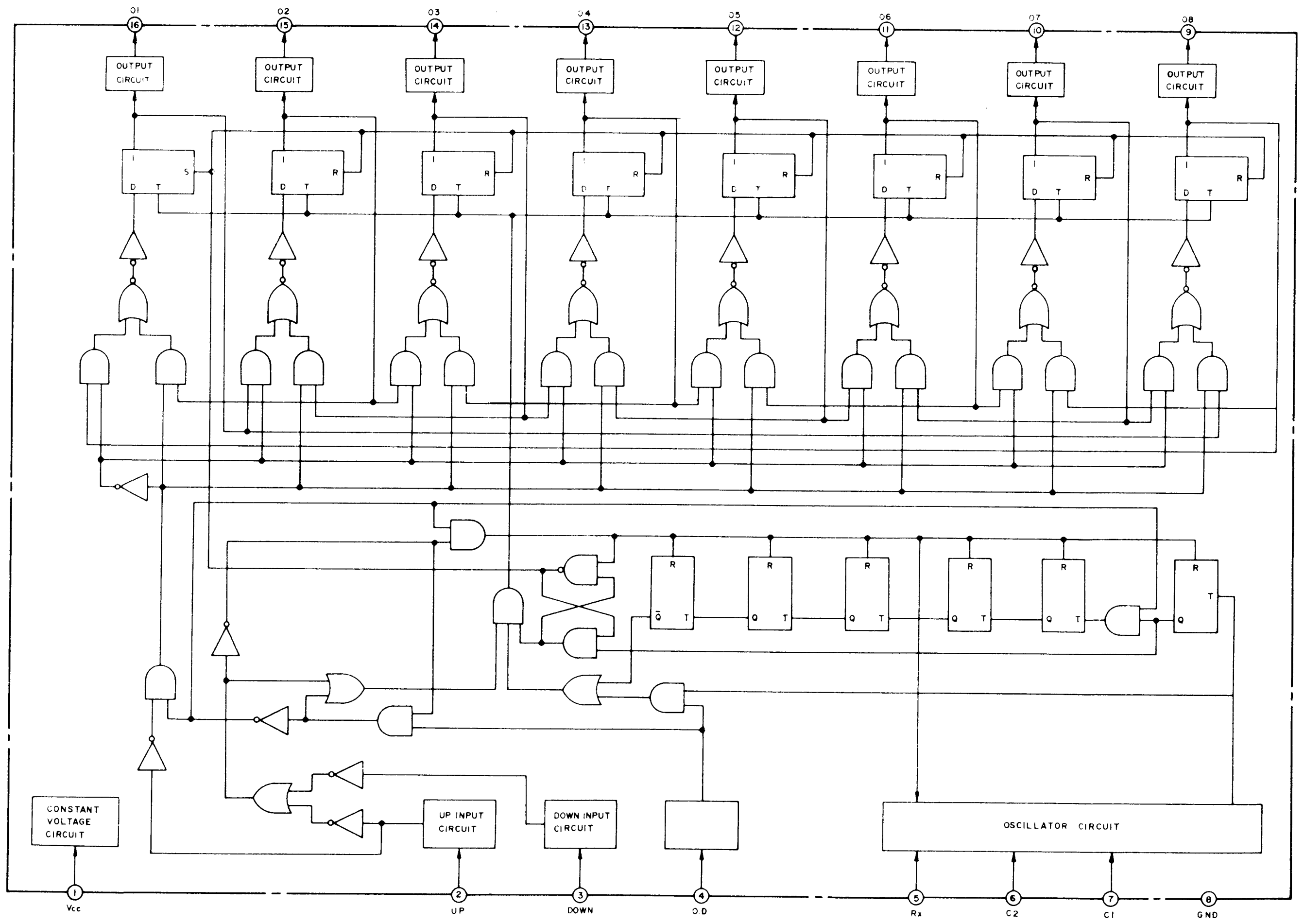

O1
O2
O3
O4
O5
O6
O7
O8
OUTPUT CIRCUIT
D T R
R Q T
CONSTANT VOLTAGE CIRCUIT
UP INPUT CIRCUIT
DOWN INPUT CIRCUIT
OSCILLATOR CIRCUIT
Vcc
UP
DOWN
O.D
Rx
C2
C1
GND

Figure 41–2 EQUIVALENT OF INTEGRATED CIRCUIT (IC502)

VHIBA314///−1 (BA314)

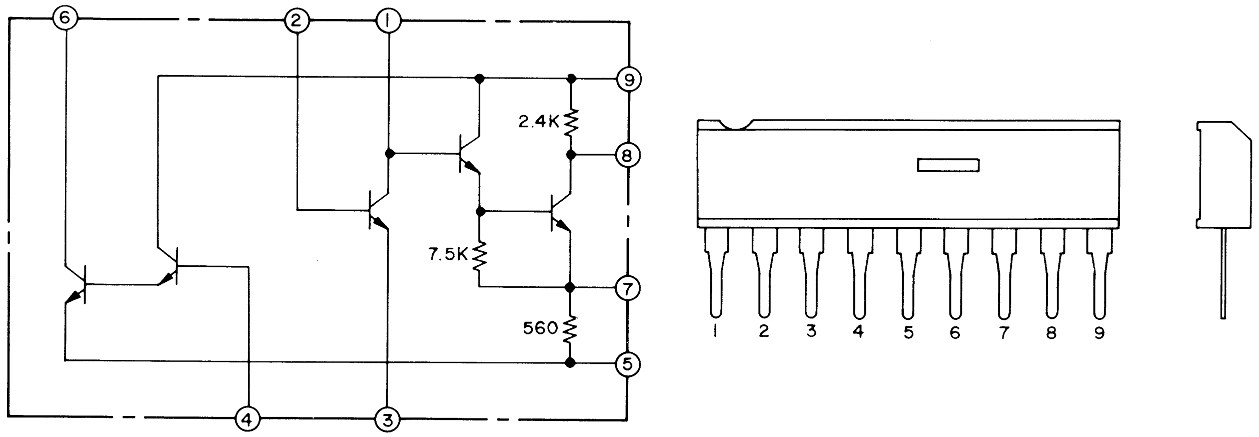

1
2
3
4
5
6
7
8
9
2.4K
7.5K
560
1 2 3 4 5 6 7 8 9

Figure 42–1 EQUIVALENT OF INTEGRATED CIRCUIT (IC101, IC102)

VHITA7229PA−F (TA7229PA)

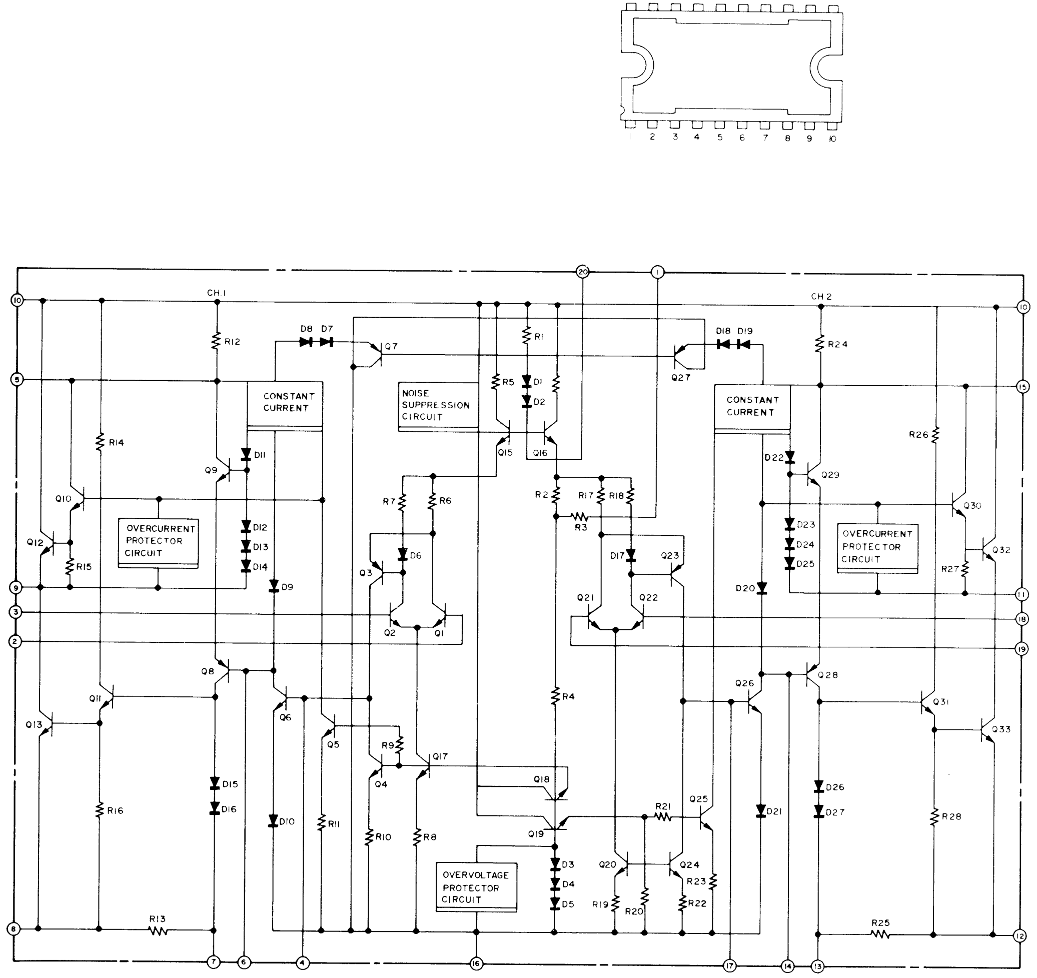
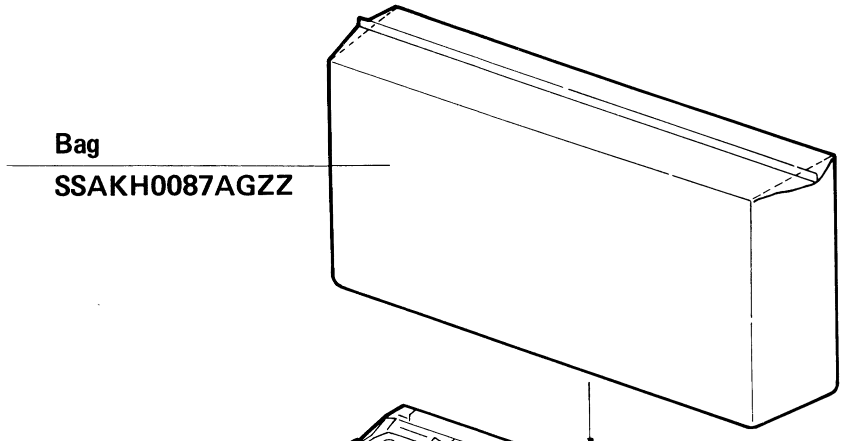
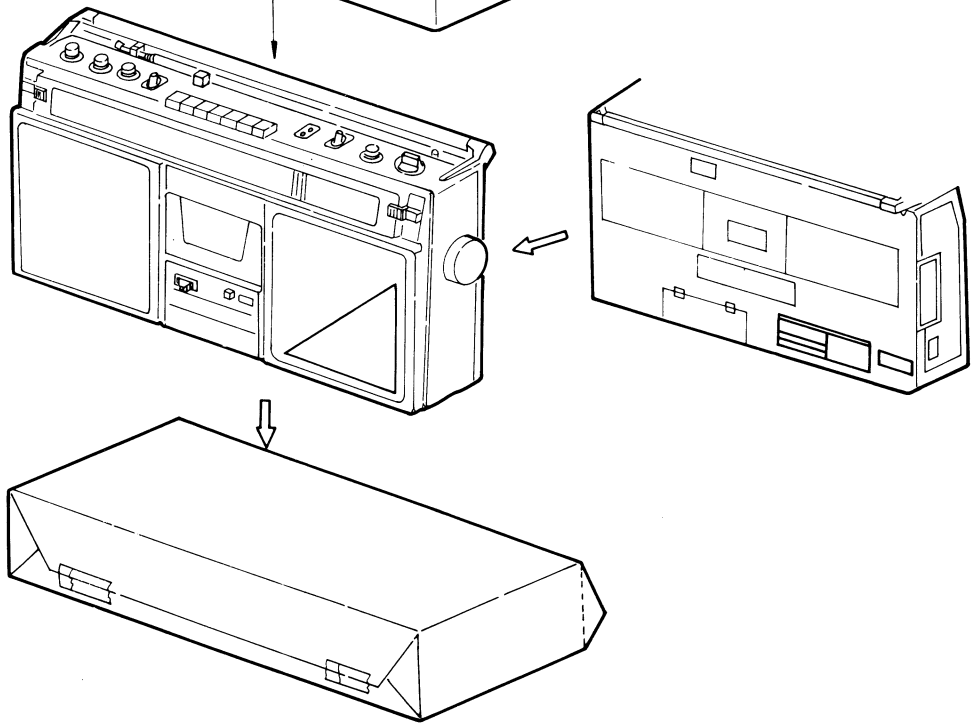
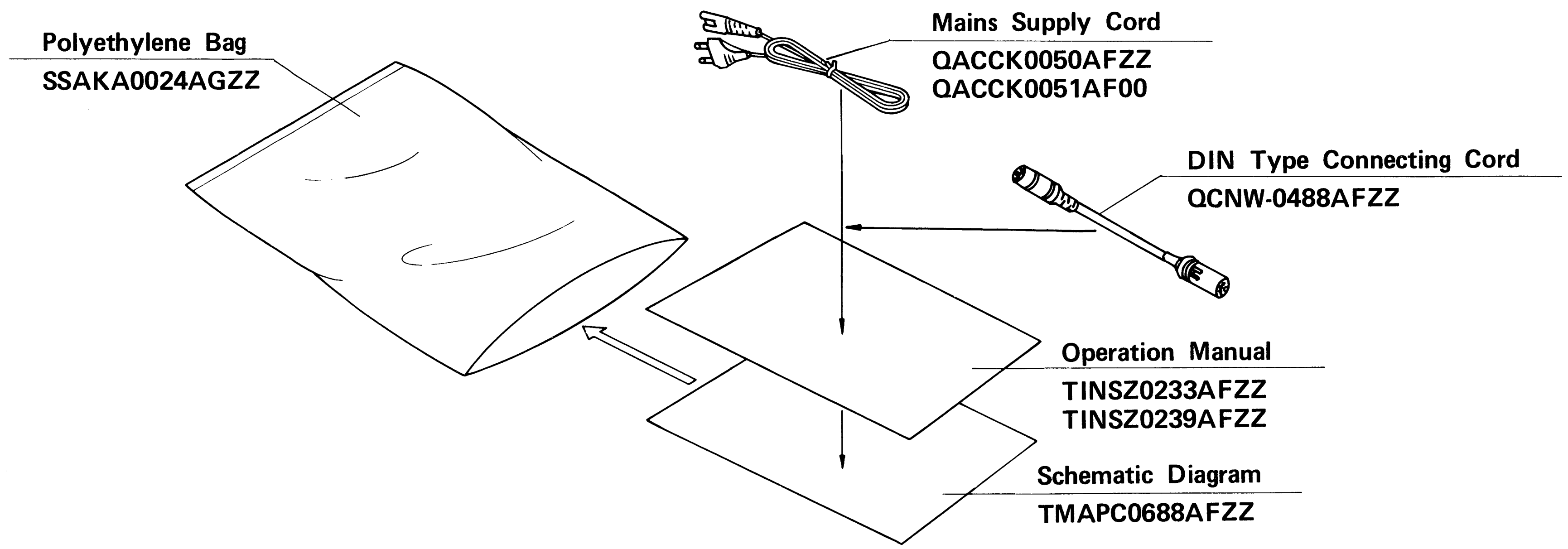

20 19 18 17 16 15 14 13 12 11
1 2 3 4 5 6 7 8 9 10
CH.1
CH.2
CONSTANT CURRENT
NOISE SUPPRESSION CIRCUIT
OVERCURRENT PROTECTOR CIRCUIT
OVERVOLTAGE PROTECTOR CIRCUIT

Figure 42–2 EQUIVALENT OF INTEGRATED CIRCUIT (IC103)


Bag
SSAKH0087AGZZ



- Set the Beat Cancel Switch (SW11) to "A" position.
- Set the Volume Control to "min" position.
- Set the Balance Control to "center" position.
- Set the Function Selector Switch (SW10) to "tape" position.
- Set the Mixing on/off Switch (SW701) to "off" position.
- Set the Mic. Mixing Control to "min" position.
- Set the Band Selector Switch (SW101) to "MW" position.
- Set the Tape Selector Switch (SW105) to "normal" position.


Polyethylene Bag
SSAKA0024AGZZ
Mains Supply Cord
QACCK0050AFZZ
QACCK0051AF00
DIN Type Connecting Cord
QCNW-0488AFZZ
Operation Manual
TINSZ0233AFZZ
TINSZ0239AFZZ
Schematic Diagram
TMAPC0688AFZZ

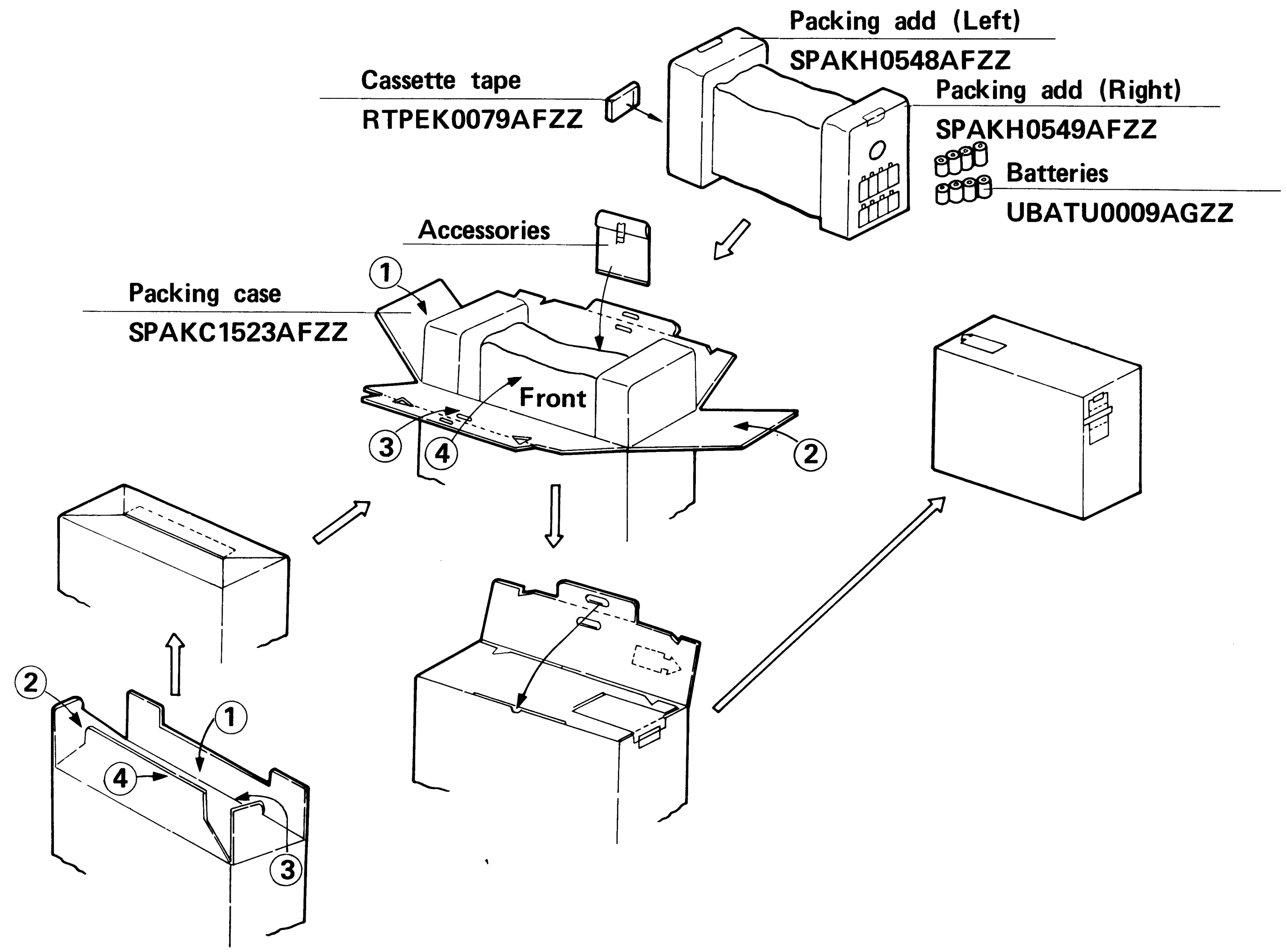

Packing add (Left)
SPAKH0548AFZZ
Packing add (Right)
SPAKH0549AFZZ
Cassette tape
RTPEK0079AFZZ
Batteries
UBATU0009AGZZ
Accessories
Packing case
SPAKC1523AFZZ
①
②
③
④
Front

Figure 43 PACKING METHOD

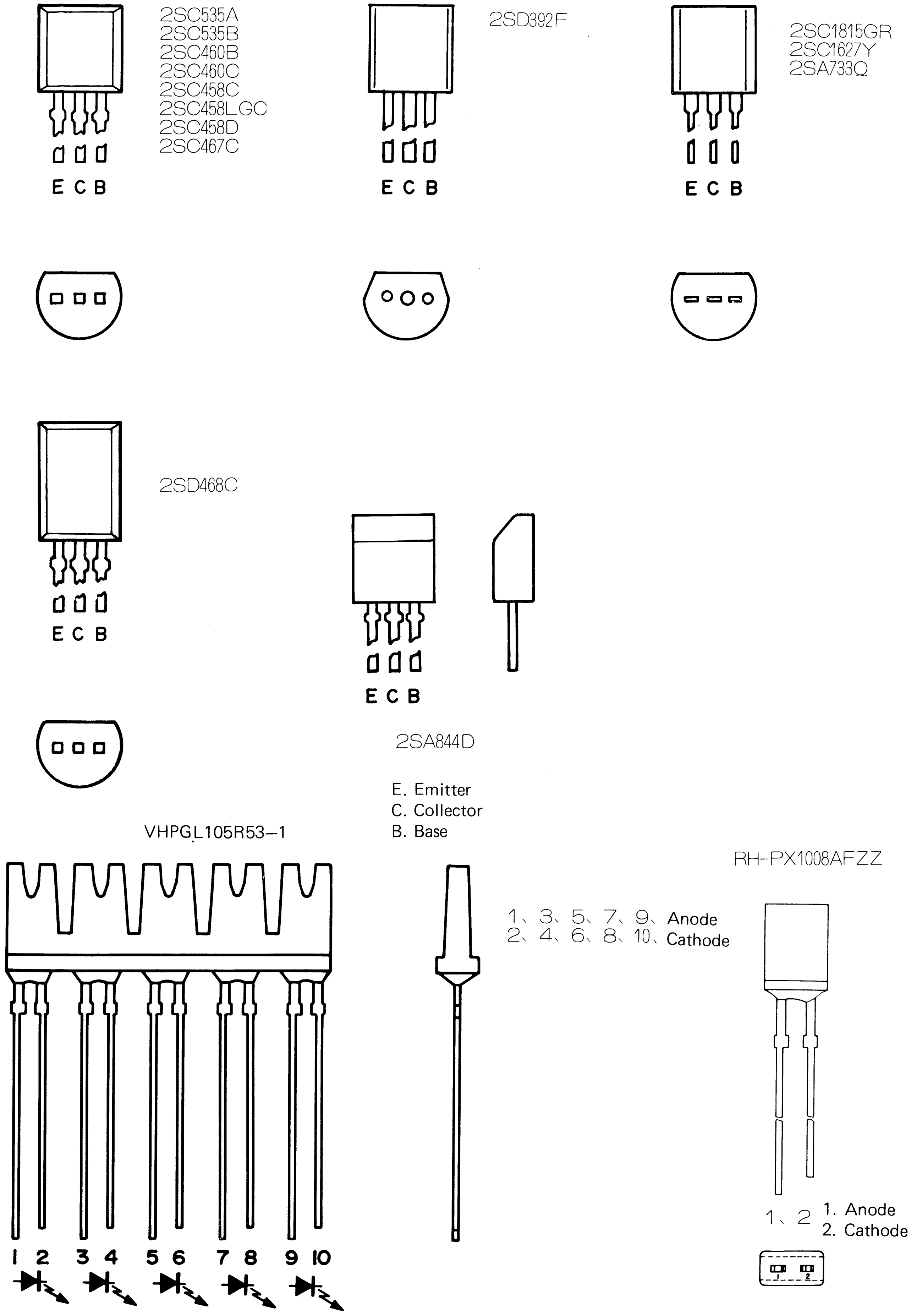


Figure 45 TRANSISTORS AND DIODES TYPE

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

NOTES: Be sure to use regular parts for securing the safety and reliability of the set. Parts marked with "⚠" and parts cross hatched (in black) are especially important for maintaining the safety and protecting ability of the set. Be sure to replace them with parts of specified part number.

INTEGRATED CIRCUITS

REF. NO.	PART NO.	DESCRIPTION	CODE
IC1	RH-IX1083AFZZ	FM IF Amp. (TA7303P)	AK
IC2	RH-IX1082AFZZ	FM Stereo Demodulator (BA1320)	AL
IC201	VHIBA314///-1	Pre Amp. (BA314)	AF
IC301	VHIBA314///-1	Pre Amp. (BA314)	AF
IC401	VHITA7229PA-F	Power Amp. (TA7229PA)	AQ
IC402	RH-IX0933AFZZ	Mixing Amp. (BA313)	AF
IC501	VHIIR3108//-1	APLD Detector (IR3108)	AK
IC502	RH-IX1123AFZZ	APLD Control (M54832)	AS
IC602	VHILB1416//-1	VU Level Indicator/Tuning Indicator Drive (LB1416)	AK

TRANSISTORS

REF. NO.	PART NO.	DESCRIPTION	CODE
Q1	VS2SC535-B/-1	FM RF Amp. (2SC535B)	AC
Q2	VS2SC535-B/-1	FM Oscillator (2SC535B)	AC
Q3	VS2SC535-B/-1	FM Mixer (2SC535B)	AC
Q4	VS2SC460-C/-1	FM IF Amp. (2SC460C)	AC
Q101	VS2SC461-B/-1	SW/MW/LW Mixer (2SC461B)	AC
Q102	VS2SC461-C/-1	SW/MW/LW Oscillation (2SC461C)	AC
Q103	VS2SC460-B/-1	SW/MW/LW IF Amp. (2SC460B)	AC
Q104	VS2SC460-C/-1	SW/MW/LW IF Amp. (2SC460C)	AC
Q201	VS2SC458LGC-1	Line Amp. (2SC458LGC)	AC
Q202	VS2SC458-C/-1	Record Amp. (2SC458C)	AB
Q203	VS2SC458-C/-1	Limiter Amp. (2SC458C)	AB
Q204	VS2SD392-F/-1	Muting (2SD392F)	AC
Q205	VS2SC1740R/-1	Din Amp. (2SC1740R)	AB
Q301	VS2SC458LGC-1	Line Amp. (2SC458LGC)	AC
Q302	VS2SC458-C/-1	Record Amp. (2SC458C)	AB
Q303	VS2SC458-C/-1	Limiter Amp. (2SC458C)	AB
Q304	VS2SD392-F/-1	Muting (2SD392F)	AC
Q305	VS2SC1740R/-1	Din Amp. (2SC1740R)	AB
Q401	VS2SD467-C/-1	Bias Oscillation (2SD467C)	AC
Q402	VS2SD467-C/-1	Bias Oscillation (2SD467C)	AC
Q403	VS2SD467-C/-1	Ripple Filter (2SD467C)	AC
Q501	VS2SA844-D/-1	APLD Switching (2SA844D)	AC
Q502	VS2SA844-D/-1	APLD Switching (2SA844D)	AC
Q503	VS2SC458-C/-1	Thyristor Reset (2SC458C)	AB
Q504	VS2SC458-D/-1	Plunger Control (2SC458D)	AB
Q505	VS2SC458-D/-1	Plunger Control (2SC458D)	AB
Q506	VS2SA844-D/-1	Plunger Control (2SA844D)	AC
Q507	VS2SD468-C/-1	Plunger Drive (2SD468C)	AD
Q508	VS2SC458-D/-1	APLD Switching (2SC458D)	AB

DIODES

REF. NO.	PART NO.	DESCRIPTION	CODE
D1	VHD1S2076//-1	Static Protector (1S2076)	AB
D2	VHD1S2076//-1	Static Protector (1S2076)	AB
D3	VHD1S2076//-1	Protector (1S2076)	AB
D4	VHC1S2688-BIF	Variable Capacitance Diode AFC (1S2688B)	AC
D5	VHD1N34A///-1	Tuning Meter (1N34A)	AB
D6	VHD1S2076//-1	Tuning Meter (1S2076)	AB
D8	VHEHZ6B2L//-1	Zener, Voltage Stabilizer (HZ6B2L)	AB
D9	VHD1S2076//-1	Overload (1S2076)	AB
D10	VHEWZ054///-1	Zener, Voltage Stabilizer (WZ054)	AB
D11	RH-PX1008AFZZ	Stereo Indicator (GL-9PR2)	AD
D12	RH-PX1008AFZZ	Battery Indicator (GL-9PR2)	AD
D101	VHD1N34A///-1	AM Overload (1N34A)	AB
D102	VHD1N34A///-1	AM Detector (1N34A)	AB
D103	VHD1N34A///-1	AM Detector (1N34A)	AB
D104	VHD1S2076//-1	Switching (1S2076)	AB
D109	VHD1S2076//-1	Protector (1S2076)	AB
D201	VHD1S2076//-1	Static Protector (1S2076)	AB
D202	VHD1S2076//-1	VU Level Indicator Circuit (1S2076)	AB
D203	VHD1S2076//-1	VU Level Indicator Circuit (1S2076)	AB
D301	VHD1S2076//-1	Static Protector (1S2076)	AB
D302	VHD1S2076//-1	VU Level Indicator Circuit (1S2076)	AB
D303	VHD1S2076//-1	VU Level Indicator Circuit (1S2076)	AB
D401	VHD1S2076//-1	Remote Circuit (1S2076)	AB
D402	VHD1S2076//-1	ALC (1S2076)	AB
D501	VHD1S2076//-1	Reverse Current Protector (1S2076)	AB
D502	VHD1S2076//-1	Protector (1S2076)	AB
D503	VHD1S2076//-1	Switching (1S2076)	AB
D504	VHD1N34A///-1	Rectifier (1N34A)	AB
D505	VHEHZ6B2L//-1	Zener Voltage Stabilizer (HZ6B2L)	AB
D506	VHD1S2076//-1	Switching (1S2076)	AB
D507	VHD10E1////-1	Surge Absorber (10E1)	AC
D508	VHD1S2076//-1	Switching (1S2076)	AB
D601	VHD10E1////-1	Power Rectifier (10E1)	AC
⚠ D602	VHD10E1////-1	Power Rectifier (10E1)	AC
D603	VHD10E1////-1	Power Rectifier (10E1)	AC
D604	VHD10E1////-1	Power Rectifier (10E1)	AC
D611, D612, D613, D614, D615	VHPGL105R53-1	VU Level Indicator/Tuning Indicator (GL105R53)	AK
D801, D802, D803, D804, D805, D806, D807	Not Available	APLD Number Storing Indicator, Part of QSW-Z0082AFZZ Assembly	

PARTS LIST

CONTROLS

REF. NO.	PART NO.	DESCRIPTION	CODE
R34	RVR-M0127AFZZ	10K ohm (B), V.C.O. Adjust	AC
VR401 -A, B	RVR-A0134AFZZ	20K ohm (A), Tone	AH
VR402	RVR-B0180AFZZ	50K ohm (B), Volume	AF
VR403 -A, B	RVR-B0179AFZZ	20K ohm (B), Balance	AH
R452	RVR-M0003SGZZ	5K ohm (B), Bias Current Adjust	AC
R453	RVR-M0003SGZZ	5K ohm (B), Bias Current Adjust	AC
R701	RVR-Z0089AFZZ	5K ohm (B), Mic Mixing	AE
VC1, VC2, VC101, VC102, TC1, TC2, TC102, TC103	RVC-R0057AFZZ	Variable Capacitor Tuning with Trimmers TC1: FM RF Trimmer TC2: SW Antenna Trimmer TC102: Trimmer Assembly TC103: MW/LW Oscillator	AN
TC101	RTO-H1007AFZZ	LW Antenna Trimmer	AC
TC104	RTO-H1007AFZZ	SW Oscillator Trimmer	AC
TC105, TC106	RTO-H2050AFZZ	Trimmer Assembly MW/LW Oscillator	AD

THYRISTOR

REF. NO.	PART NO.	DESCRIPTION	CODE
SCR-501	VHSCR02AM1B-1	Silicon Controlled Rectifier (CR02AM)	AE

COILS

REF. NO.	PART NO.	DESCRIPTION	CODE
L1, L2	RCILR0090AFZZ	FM IF	AA
L3, L4	RCILR0118AFZZ	FM Oscillator	AA
L5	RCILC0030AFZZ	FM IF Trap	AB
L6	RCILF0014AGZZ	Choke	AC
L101	RCILA0255AFZZ	SW Antenna	AD
L102	RCILA0436AFZZ	MW/LW Bar Antenna	AK
L103	RCILB0309AFZZ	SW Oscillator	AD
L104	RCILB0389AFZZ	MW Oscillator	AD
L105	RCILB0353AFZZ	LW Oscillator	AC
L201	RCILZ0019AGZZ	Peaking Coil	AC
L301	RCILZ0019AGZZ	Peaking Coil	AC
L401	RCILB0465AFZZ	Bias Oscillator	AE
L402	RCILF0014AGZZ	Noise Suppressor	AC

TRANSFORMERS

REF. NO.	PART NO.	DESCRIPTION	CODE
T1	RCILI0157AFZZ	FM IF	AC
T2	RCILI0208AFZZ	FM IF	AC
T101	RCILI0224AFZZ	AM IF	AH
T102	RCILI0170AFZZ	AM IF	AC
T201, T301	RCILB0468AFZZ	Bias Step Up	AD
△ T602	RTRNP0588AFZZ	Power	AV

CERAMIC FILTERS

REF. NO.	PART NO.	DESCRIPTION	CODE
CF1, CF2	RFILF0080AFZZ	FM IF 10.7MHz	AD

PACKAGED CIRCUITS

REF. NO.	PART NO.	DESCRIPTION	CODE
M1	RFILF0056AFZZ	Band Pass Filter	AE
M2, M3	RMPTA0104AFZZ	38kHz Trap	AD
R527	RMPTC0008AFZZ	4.7K ohm x 7	AD

ELECTROLYTIC CAPACITORS

REF. NO.	PART NO.	DESCRIPTION	CODE
C37	RC-EZS476AF1C	47MFD, 16V, ±20%	AB
C42	VCEALU1HW474M	.47MFD, 50V, ±20%	AB
C43	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C45	VCEAAU1EW335A	3.3MFD, 25V, +75 –10%	AB
C47	RC-EZ1086AFZZ	470MFD, 16V, +50 –10%	AD
C51	VCEALU1HW224M	.22MFD, 50V, ±20%	AB
C52	VCEALU1HW474M	.47MFD, 50V, ±20%	AB
C53	VCEALU1HW335M	3.3MFD, 50V, ±20%	AB
C59	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C60	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C62	RC-EZS476AF1A	47MFD, 10V, ±20%	AB
C129	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C131	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C135	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C138	VCEALU1HW224M	.22MFD, 50V, ±20%	AB
C201	VCEALU1HW334M	.33MFD, 50V, ±20%	AB
C202	VCEALU1HW105M	1MFD, 50V, ±20%	AB
C203	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C206	VCSATU1EF105M	1MFD, 25V, ±20%, Tantalum	AC
C207	VCEAAU1AW336Y	33MFD, 10V, +50 –10%	AB
C208	RC-EZS227AF1A	220MFD, 10V, ±20%	AB
C210	VCEALU1HW224M	.22MFD, 50V, ±20%	AB
C212	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C214	RC-EZS476AF1A	47MFD, 10V, ±20%	AB
C219	VCEALU1HW105M	1MFD, 50V, ±20%	AB
C221	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C222	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C225	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C226	VCEAAU1HW105A	1MFD, 50V, ±20%	AB
C228	VCEAAU1HW105A	1MFD, 50V, ±20%	AB
C232	VCEALU1HW104M	.1MFD, 50V, ±20%	AB
C234	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C236	RC-EZS107AF1C	100MFD, 16V, ±20%	AB
C240	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C241	VCEALU1HW104M	.1MFD, 50V, ±20%	AB
C242	RC-EZS108AF1C	1000MFD, 16V, ±20%	AD
C301	VCEALU1HW334M	.33MFD, 50V, ±20%	AB
C302	VCEALU1HW105M	1MFD, 50V, ±20%	AB
C303	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C305	RC-EZS476AF1A	47MFD, 10V, ±20%	AB
C306	VCSATU1EF105M	1MFD, 25V, ±20%, Tantalum	AC
C307	VCEAAU1AW336Y	33MFD, 10V, +50 –10%	AB
C308	RC-EZS227AF1A	220MFD, 10V, ±20%	AB
C310	VCEALU1HW224M	.22MFD, 50V, ±20%	AB
C312	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C314	RC-EZS476AF1A	47MFD, 10V, ±20%	AB

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C319	VCEALU1HW105M	1MFD, 50V, ±20%	AB
C321	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C322	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C325	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C326	VCEAAU1HW105A	1MFD, 50V, ±20%	AB
C328	VCEAAU1HW105A	1MFD, 50V, ±20%	AB
C332	VCEALU1HW104M	.1MFD, 50V, ±20%	AB
C334	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C336	RC-EZS107AF1C	100MFD, 16V, ±20%	AB
C340	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C341	VCEALU1HW104M	.1MFD, 50V, ±20%	AB
C342	RC-EZS108AF1C	1000MFD, 16V, ±20%	AD
C401	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C402	RC-EZS107AF1A	100MFD, 10V, ±20%	AB
C403	VCEAAU1AW336Y	33MFD, 10V, +50 –10%	AB
C404	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C405	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C406	VCEAAU1AW336Y	33MFD, 10V, +50 –10%	AB
C407	RC-EZS227AF1A	220MFD, 10V, ±20%	AB
C408	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C410	RC-EZS107AF1C	100MFD, 16V, ±20%	AB
C411	RC-EZS228AF1C	2200MFD, 16V, ±20%	AF
C416	RC-EZS477AF1C	470MFD, 16V, ±20%	AC
C452	RC-EZS107AF1C	100MFD, 16V, ±20%	AB
C481	VCEALU1HW105M	1MFD, 50V, ±20%	AB
C484	VCEAAU1AW336Y	33MFD, 10V, +50 –10%	AB
C485	RC-EZS227AF1A	220MFD, 10V, ±20%	AB
C487	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C488	VCEALU1HW104M	.1MFD, 50V, ±20%	AB
C502	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C503	VCEALU1CW106M	10MFD, 16V, ±20%	AB
C506	RC-EZS476AF1C	47MFD, 16V, ±20%	AB
C507	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C508	VCEALU1HW474M	47MFD, 10V, ±20%	AB
C509	VCEAAU1AW336Y	33MFD, 10V, +50 –10%	AB
C510	RC-EZS107AF1C	100MFD, 16V, ±20%	AB
C511	VCEALU1HW474M	.47MFD, 50V, ±20%	AB
C512	VCEALU1HW104M	.1MFD, 50V, ±20%	AB
C612	VCEAAU1EW475A	4.7MFD, 25V, +75 –10%	AB
C613	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB
C615	VCEAAU1CW106Y	10MFD, 16V, +50 –10%	AB

CAPACITORS

REF. NO.	PART NO.	DESCRIPTION	CODE
C1	VCCSPU1HL100F	10PF, 50V, ±1PF, Ceramic	AA
C2	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
C3	VCKYPU1HB102K	.001MFD, 50V, ±10%, Ceramic	AA
C4	VCCSPU1HL3R0C	3PF, 50V, ±.25PF, Ceramic	AA
C5	VCCSPU1HL220J	22PF, 50V, ±5%, Ceramic	AA
C6	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
C7	VCKYPU1HB472M	.0047MFD, 50V, ±20%, Ceramic	AA
C8	VCCSAT1HL4R7C	4.7PF, 50V, ±.25PF, Ceramic	AA
C9	VCCCPU1HH1R5C	1.5PF (CH), 50V, ±.25PF, Ceramic	AA
C10	VCCSPU1HL101J	100PF, 50V, ±5%, Ceramic	AA
C11	VCCSPU1HL3R0C	3PF, 50V, ±.25PF, Ceramic	AA
C12	VCKYPU1HB472M	.0047MFD, 50V, ±20%, Ceramic	AA
C14	VCTYAT1EX103N	.01MFD, 50V, ±20%, Semiconductor	AA
C16	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
C17	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
C18	VCCUPU1HJ150J	15PF (UJ), 50V, ±5%, Ceramic	AA
C19	VCCCPU1HH180J	18PF (CH), 50V, ±.25PF, Ceramic	AA
C20	VCCCPU1HH5R0C	5PF (CH), 50V, ±.25PF, Ceramic	AA
C21	VCCCPU1HH6R0D	6PF (CH), 50V, ±.5PF, Ceramic	AA
C22	VCTYAT1EX103N	.01MFD, 25V, ±30%, Semiconductor	AA
C23	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AB
C24	VCTYAT1CY223N	.022MFD, 16V, ±30%, Semiconductor	AA
C26	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C27	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C28	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AB
C29	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AB
C30	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C33	VCCCPU1HH100F	10PF (CH), 50V, ±1PF, Ceramic	AA
C34	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C35	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AB
C36	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C38	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AB
C40	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AA
C41	VCTYAT1EX103N	.01MFD, 25V, ±30%, Semiconductor	AA
C44	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C46	VCKYPU1HB223M	.022MFD, 50V, ±5%, Ceramic	AA
C48	VCTYAT1CY223N	.022MFD, 16V, ±30%, Semiconductor	AA
C49	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C50	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AB
C54	VCQSMU1HS471J	470PF, 50V, ±5%, Styrol	AB
C55	VCKYAT1HB102K	.001MFD, 50V, ±10%, Ceramic	AA
C56	VCKYAT1HB102K	.001MFD, 50V, ±10%, Ceramic	AA
C61	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C100	VCKYPU1HB472M	.0047MFD, 50V, ±20%, Ceramic	AA
C101	VCCSAT1HL120J	12PF, 50V, ±5%, Ceramic	AA
C102	VCCSPU1HL6R0C	6PF, 50V, ±.25PF, Ceramic	AA
C103	VCCSPU1HL560J	56PF, 50V, ±5%, Ceramic	AA
C106	VCTYAT1HV332K	.0033MFD, 25V, ±30%, Ceramic	AA
C107	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AA
C108	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AA
C110	VCCCPU1HH5R0C	5PF, 50V, ±.25PF, Ceramic	AA
C111	VCQSMT1HS151J	150PF, 50V, ±5%, Styrol	AB
C112	VCCCPU1HH220J	22PF (CH), 50V, ±5%, Ceramic	AA

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
C113	VCTYAT1CY223N	.022MFD, 16V, ±30%, Ceramic	AA
C114	VCQYKU1HM152K	.0015MFD, 50V, ±10%, Mylar	AA
C115	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C116	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AB
C117	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C118	VCTYAT1CY223N	.022MFD, 16V, ±30%, Ceramic	AA
C119	VCKYAT1HB331K	330PF, 50V, ±10%, Ceramic	AA
C120	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C121	VCTYAT1CY223N	.022MFD, 16V, ±30%, Ceramic	AA
C122	VCTYAT1CY223N	.022MFD, 16V, ±30%, Ceramic	AA
C123	VCTYAT1CY223N	.022MFD, 16V, ±30%, Ceramic	AA
C124	VCTYAT1EX222N	.0022MFD, 25V, ±30%, Ceramic	AA
C125	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C126	VCQYKU1HM333M	.033MFD, 50V, ±20%, Mylar	AB
C127	VCKZPU1HF333P	.033MFD, 50V, +100 –0%, Ceramic	AA
C128	VCTYAT1CY223N	.022MFD, 16V, ±30%, Ceramic	AA
C130	VCTYAT1CY223N	.022MFD, 16V, ±30%, Ceramic	AA
C132	VCKZPU1HF223Z	.022MFD, 50V, +80 –20%, Ceramic	AA
C133	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C134	VCKZPU1HF103Z	.01MFD, 50V, +80 –20%, Ceramic	AA
C137	VCQYKU1HM333M	.033MFD, 50V, ±20%, Mylar	AB
C204	VCKYPU1HB821K	820PF, 50V, ±10%, Ceramic	AA
C209	VCCSAT1HL330J	33PF, 50V, ±5%, Ceramic	AA
C213	VCCSAT1HL560J	56PF, 50V, ±5%, Ceramic	AA
C215	VCQYKU1HM332K	.0033MFD, 50V, ±10%, Mylar	AA
C216	VCQYKU1HM183K	.018MFD, 50V, ±10%, Mylar	AB
C217	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AA
C218	VCQYKU1HM272K	.0027MFD, 50V, ±10%, Mylar	AA
C220	VCCSAT1HL101J	10PF, 50V, ±5%, Ceramic	AA
C223	VCCSAT1HL330J	33PF' 50V, ±5%, Ceramic	AA
C224	VCQYKU1HM223K	.022MFD, 50V, ±10%, Mylar	AB
C227	VCCSPU1HL471J	470PF, 50V, ±5%, Ceramic	AB
C229	VCKYAT1HB271K	270PF, 50V, ±10%, Ceramic	AA
C230	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C231	VCQYKU1HM392K	.0039MFD, 50V, ±10%, Mylar	AA
C233	VCQYKU1HM563K	.056MFD, 50V, ±10%, Mylar	AB
C235	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AA
C237	VCCSAT1HL101J	100PF, 50V, ±5%, Ceramic	AA
C238	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AB
C239	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C304	VCKYPU1HB821K	820PF, 50V, ±10%, Ceramic	AA
C309	VCCSAT1HL330J	33PF, 50V, ±5%, Ceramic	AA
C313	VCCSAT1HL560J	56PF, 50V, ±5%, Ceramic	AA
C315	VCQYKU1HM332K	.0033MFD, 50V, ±10%, Mylar	AA
C316	VCQYKU1HM183K	.018MFD, 50V, ±10%, Mylar	AB
C317	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AA
C318	VCQYKU1HM272K	.0027MFD, 50V, ±10%, Mylar	AA
C320	VCCSAT1HL101J	100PF, 50V, ±5%, Ceramic	AA
C323	VCCSAT1HL330J	33PF, 50V, ±5%, Ceramic	AA
C324	VCQYKU1HM223K	.022MFD, 50V, ±5%, Mylar	AB
C327	VCCSPU1HL471J	470PF, 50V, ±5%, Ceramic	AB
C329	VCKYAT1HB271K	270PF, 50V, ±10%, Ceramic	AA
C330	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
C331	VCQYKU1HM392K	.0039MFD, 50V, ±10%, Mylar	AA
C333	VCQYKU1HM563K	.056MFD, 50V, ±10%, Mylar	AB
C335	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AA
C337	VCCSAT1HL101J	100PF, 50V, ±5%, Ceramic	AA
C338	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AB
C339	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C409	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C412	VCQYKU1HM104M	.1MFD, 50V, ±20%, Mylar	AC
C413	VCQYKU1HM104M	.1MFD, 50V, ±20%, Mylar	AC
C414	VCKYPU1HB223M	.022MFD, 50V, ±20%, Mylar	AB
C451	VCTYAT1EX103N	.01MFD, 25V, ±30%, Ceramic	AA
C453	VCQYKU1HM332K	.0033MFD, 50V, ±10%, Mylar	AA
C454	VCQYKU1HM272K	.0027MFD, 50V, ±10%, Mylar	AA
C456	VCQYKU1HM332K	.0033MFD, 50V, ±10%, Mylar	AA
C457	VCQYKU1HM153M	.015MFD, 50V, ±20%, Mylar	AB
C458	VCQYKU1HM682K	.0068MFD, 50V, ±10%, Mylar	AA
C459	VCQYKU1HM153K	.015MFD, 50V, ±10%, Mylar	AA
C460	VCQPSU2AA473J	.047MFD, 100V, ±5%, Polypropylene	AC
C482	VCKYAT1HD102M	.001MFD, 50V, ±20%, Ceramic	AA
C483	VCCSAT1HL560J	56PF, 50V, ±5%, Ceramic	AA
C486	VCCSAT1HL330J	33PF, 50V, ±5%, Ceramic	AA
C501	VCTYAT1EX103N	.01MFD, 25V, ±30%, Ceramic	AA
C504	VCCSAT1HL330J	33PF, 50V, ±5%, Ceramic	AA
C505	VCKZPU1HF333P	.033MFD, 50V, +100 –0%	AA
C513	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AA
C514	VCKYPU1HB103M	.01MFD, 50V, ±20%, Ceramic	AA
C601	VCKZPU1HF104Z	.1MFD, 50V, +80 –20%, Ceramic	AB
C602	VCKZPU1HF104Z	.1MFD, 50V, +80 –20%, Ceramic	AB
C603	VCKZPU1HF223Z	.022MFD, +80 –20%, Ceramic	AA
C604	VCKZPU1HF223Z	.022MFD, +80 –20%, Ceramic	AA
C614	VCKYAT1HB561K	560PF, 50V, ±10%, Ceramic	AA
C801	VCQYKU1HM272K	.0027MFD, 50V, ±10%, Mylar	AA
C802	VCQYKU1HM272K	.0027MFD, 50V, ±10%, Mylar	AA
C803	VCQYKU1HM222K	.0022MFD, 50V, ±10%, Mylar	AA
C804	VCQYKU1HM222K	.0022MFD, 50V, ±10%, Mylar	AA
C805	VCQYKU1HM182K	.0018MFD, 50V, ±10%, Mylar	AA
C806	VCQYKU1HM182K	.0018MFD, 50V, ±10%, Mylar	AA

RESISTORS

(Unless otherwise specified resistors are 1/4W, ±5%, Carbon Type.)

REF. NO.	PART NO.	DESCRIPTION	CODE
R1	VRD-ST2EE102J	1K ohm	
R3	VRD-ST2EE471J	470 ohm	
R5	VRD-ST2EE152J	1.5K ohm	
R6	VRD-SU2EE473J	47 K ohm	
R7	VRD-SU2EE151J	150 ohm	
R8	VRD-ST2EE104J	100K ohm	
R15	VRD-ST2EE102J	1K ohm	
R17	VRD-ST2EE221J	220 ohm	
R18	VRD-SU2EE102J	1K ohm	
R21	VRD-ST2EE560J	56 ohm	
R25	VRD-ST2EE332J	3.3K ohm	
R26	VRD-ST2EE471J	470 ohm	
R28	VRD-ST2EE680J	68 ohm	
R31	VRD-ST2EE102J	1K ohm	
R32	VRD-ST2EE471J	470 ohm	
R33	VRD-ST2EE183J	18K ohm	
R37	VRD-ST2EE153J	15K ohm	
R38	VRD-ST2EE153J	15K ohm	
R41	VRD-ST2EE102J	1K ohm	
R43	VRD-ST2EE221J	220 ohm	
R44	VRD-SU2EE471J	470 ohm	
R70	VRD-ST2EE471J	470 ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R101	VRD-ST2EE101J	100 ohm	
R102	VRD-ST2EE182J	1.8K ohm	
R104	VRD-SU2EE4R7J	4.7 ohm	
R106	VRD-SU2EE100J	10 ohm	
R107	VRD-SU2EE100J	10 ohm	
R108	VRD-SU2EE121J	120 ohm	
R109	VRD-ST2EE100J	10 ohm	
R110	VRD-SU2EE471J	470 ohm	
R111	VRD-SU2EE394J	390K ohm	
R112	VRD-ST2EE102J	1K ohm	
R114	VRD-ST2EE121J	120 ohm	
R117	VRD-ST2EE103J	10K ohm	
R120	VRD-ST2EE152J	1.5K ohm	
R121	VRD-ST2EE152J	1.5K ohm	
R126	VRD-ST2EE471J	470 ohm	
R133	VRD-ST2EE221J	220 ohm	
R203	VRD-SU2EE821J	820 ohm	
R204	VRD-ST2EE101J	100 ohm	
R209	VRD-ST2EE103J	10K ohm	
R210	VRD-ST2EE102J	1K ohm	
R211	VRD-ST2EE332J	3.3K ohm	
R212	VRD-ST2EE684J	680K ohm	
R213	VRD-ST2EE821J	820 ohm	
R214	VRD-ST2EE332J	3.3K ohm	
R215	VRD-ST2EE224J	220K ohm	
R216	VRD-ST2EE563J	56K ohm	
R217	VRD-ST2EE123J	12K ohm	
R219	VRD-ST2EE470J	47 ohm	
R220	VRD-ST2EE271J	270 ohm	
R221	VRD-ST2EE102J	1K ohm	
R222	VRD-ST2EE183J	18K ohm	
R223	VRD-ST2EE124J	120K ohm	
R224	VRD-ST2EE103J	10K ohm	
R225	VRD-ST2EE224J	220K ohm	
R226	VRD-ST2EE153J	15K ohm	
R227	VRD-ST2EE123J	12K ohm	
R232	VRD-ST2EE564J	560K ohm	
R237	VRD-ST2EE182J	1.8K ohm	
R239	VRD-ST2EE474J	470K ohm	
R243	VRD-ST2EE474J	470K ohm	
R244	VRD-ST2EE122J	1.2K ohm	
R246	VRD-SU2EE824J	820K ohm	
R248	VRD-ST2EE332J	3.3K ohm	
R252	VRD-ST2EE473J	47K ohm	
R254	VRD-ST2EE561J	560 ohm	
R255	VRD-ST2EE473J	47K ohm	
R256	VRD-ST2EE473J	47K ohm	
R257	VRD-ST2EE221J	220 ohm	
R280	VRD-SU2EE393J	39K ohm	
R303	VRD-ST2EE821J	820 ohm	
R304	VRD-ST2EE101J	100 ohm	
R309	VRD-ST2EE103J	10K ohm	
R310	VRD-ST2EE102J	1K ohm	
R311	VRD-ST2EE332J	3.3K ohm	
R312	VRD-ST2EE684J	680K ohm	
R313	VRD-ST2EE821J	820 ohm	
R314	VRD-ST2EE332J	3.3K ohm	
R315	VRD-ST2EE224J	220K ohm	
R316	VRD-ST2EE563J	56K ohm	
R317	VRD-ST2EE123J	12K ohm	
R319	VRD-ST2EE470J	47 ohm	
R320	VRD-ST2EE271J	270 ohm	
R322	VRD-ST2EE183J	18K ohm	
R323	VRD-ST2EE124J	120K ohm	
R324	VRD-ST2EE103J	10K ohm	
R325	VRD-ST2EE224J	220K ohm	
R326	VRD-ST2EE153J	15K ohm	
R327	VRD-ST2EE123J	12K ohm	
R331	VRD-ST2EE102J	1K ohm	
R332	VRD-ST2EE564J	560K ohm	
R334	VRD-ST2EE221J	220 ohm	
R339	VRD-ST2EE474J	470K ohm	
R341	VRD-ST2EE471J	470 ohm	
R345	VRD-ST2EE221J	220 ohm	
R346	VRD-SU2EE824J	820K ohm	
R349	VRD-ST2EE472J	4.7K ohm	
R354	VRD-ST2EE561J	560 ohm	
R355	VRD-ST2EE473J	47K ohm	
R356	VRD-ST2EE473J	47K ohm	
R357	VRD-ST2EE221J	220 ohm	
R380	VRD-ST2EE393J	39K ohm	
R402	VRD-ST2EE824J	820K ohm	
R403	VRD-ST2EE103J	10K ohm	
R404	VRD-ST2EE122J	1.2K ohm	
R405	VRD-ST2EE222J	2.2K ohm	
R406	VRD-ST2EE123J	12K ohm	
R407	VRD-ST2EE104J	100K ohm	
R410	VRD-ST2EE560J	56 ohm	
R411	VRD-ST2EE101J	100 ohm	
R413	VRD-ST2EE560J	56 ohm	
R451	VRD-ST2EE1R0J	1 ohm	
R454	VRD-ST2EE100J	10 ohm	
R455	VRD-ST2EE100J	10 ohm	
R458	VRG-ST2EA220J	22 ohm (Fusible)	AB
R481	VRD-ST2EE392J	3.9K ohm	
R484	VRD-ST2EE224J	220K ohm	
R485	VRD-ST2EE470J	47 ohm	
R486	VRD-ST2EE822J	8.2K ohm	
R487	VRD-ST2EE123J	12K ohm	
R501	VRD-ST2EE331J	330 ohm	
R502	VRD-ST2EE101J	100 ohm	
R503	VRD-ST2EE822J	8.2K ohm	
R504	VRD-ST2EE103J	10K ohm	
R505	VRD-ST2EE181J	180 ohm	
R508	VRD-ST2EE471J	470 ohm	
R516	VRD-ST2EE391J	390 ohm	
R517	VRD-ST2EE151J	150 ohm	
R518	VRD-ST2EE102J	1K ohm	
R520	VRD-ST2EE102J	1K ohm	
R525	VRD-ST2EE103J	10K ohm	
R528	VRD-SU2EE471J	470 ohm	
R613	VRD-ST2EE103J	10K ohm	
R614	VRD-ST2EE223J	22K ohm	
R615	VRD-ST2EE103J	10K ohm	
R616, R617, R618, R619, R620	VRD-ST2EE151J	150 ohm	
R622	VRD-ST2EE153J	15K ohm	
R623	VRD-ST2EE224J	220K ohm	
R626	VRD-ST2EE273J	27K ohm	
R627	VRD-ST2EE223J	22K ohm	
R702	VRD-ST2EE102J	1K ohm	
R703	VRD-ST2EE182J	1.8K ohm	
R801	VRD-ST2EE222J	2.2K ohm	
R802	VRD-ST2EE223J	22K ohm	
R803	VRD-ST2EE223J	22K ohm	
R804	VRD-ST2EE153J	15K ohm	

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
R805	VRD-ST2EE153J	15K ohm	
R806	VRD-ST2EE123J	12K ohm	
R807	VRD-ST2EE123J	12K ohm	
R808	VRD-ST2EE122J	1.2K ohm	
R809	VRD-ST2EE122J	1.2K ohm	

MECHANICAL PARTS

REF. NO.	PART NO.	DESCRIPTION	CODE
001	JKNBM0334AFSA	Key, Pause	AE
002	JKNBM0335AFSA	Key, Fast Forward Wind/ Forward APLD	AE
003	JKNBM0336AFSA	Key, Rewind/Reverse APLD	AE
004	JKNBM0337AFSA	Key, Play	AE
005	JKNBM0338AFSA	Key, Record	AE
006	JKNBM0339AFSA	Key, Stop/Eject	AE
007	LANGF0435AFZZ	Bracket, Flywheel	AC
008	LANGF0465AFFW	Bracket, Plunger Retaining	AF
009	LANGF0466AFFW	Stopper, Fool Proof	AH
010	LBSHS0001AG00	Cushion, Motor	AA
011	LBSHZ0054AFZZ	Collar, Auto Stop Actuating Lever	AA
012	LCHSM0295AFZZ	Main Chassis	
013	LCHSS0131AFZZ	Sub Chassis	
014	LHLDW1070AFZZ	Wire Holder	AB
016	LHLDW3007AGFD	Wire Holder	AA
017	LPLTM0107AFZZ	Protector, Worm Pulley	AB
018	LSTWC2001AFZZ	Stop Ring, ϕ2	AA
019	LSTWC3002AFZZ	Stop Ring, ϕ3	AA
020	LSTWC4004AFZZ	Stop Ring, ϕ4	AA
021	LX-BZ0107AGZZ	Screw, Flywheel Thrust Adjust	AB
022	LX-BZ0219AFFD	Screw, Motor	AA
023	LX-HZ0056AFFD	Screw, Flywheel Bracket	AA
024	LX-WZ5018AGZZ	Washer, ϕ2.1	AA
025	LX-WZ5020AGZZ	Washer, ϕ1.7	AA
026	LX-WZ5037AGZZ	Washer, ϕ2.6	AA
027	LX-WZ9053AFZZ	Washer, Capstan Oil Cut	AA
028	MLEVF0802AFZZ	Lever, Pause Lock	AB
029	MLEVF0803AFZZ	Lever, Sub Chassis Return	AB
030	MLEVF0811AFFW	Lever, Lock Release	AC
031	MLEVF0812AFFW	Lever, APLD	AD
032	MLEVF0813AFFW	Lever, Record Safety	AB
033	MLEVF0817AFFW	Lever, Auto Stop Killer	AC
034	MLEVF0869AFZZ	Lever, Play	AE
035	MLEVF0871AFZZ	Lever, Rewind	AD
036	MLEVF0872AFZZ	Lever, Fast-forward	AD
037	MLEVF0874AFZZ	Lever, Record	AE
038	MLEVF0875AFZZ	Lever, Pause	AE
039	MLEVF0962AFZZ	Lever, Key Lever Lock	AD
040	MLEVF0963AFZZ	Lever, APLD Lock	AD
041	MLEVF0964AFZZ	Lever, Stop/Eject	AD
042	MLEVP0110AFZZ	Lever, Auto Stop Actuation	AC
043	MLEVP0112AFZZ	Lever, Cassette Chamber Lock	AC
044	MLEVP0113AFZZ	Lever, Erase Proof	AC
045	MLEVP0114AFZZ	Lever, Fast-forward/Rewind	AC
046	MLEVP0115AFZZ	Lever, Brake	AC
047	MSPRC0031AGMN	Spring, Record/Playback Head Azimuth	AA
048	MSPRC0161AFFJ	Spring, APLD Lock Lever	AA
049	MSPRC0164AFFJ	Spring, Key Lever Lock Lever	
050	MSPRC0167AFFJ	Spring, Lock Release Lever	AA
051	MSPRC0173AFFJ	Spring, Plunger	AA
052	MSPRC0202AFFJ	Spring, Record Lever	AA
053	MSPRC0203AFFJ	Spring, Fast-forward Lever/ Rewind Lever	AA
054	MSPRC0204AFFJ	Spring, Play/Pause/Stop Cassette Eject Lever	AB
055	MSPRD0181AFFJ	Spring, Brake Lever	AA
056	MSPRD0182AFFJ	Spring, Cassette Chamber Lock Lever	AA
057	MSPRD0183AFFJ	Spring, Over Stroke Absorbing	AA
058	MSPRD0184AFFJ	Spring, Pressure Roller	AA
059	MSPRD0185AFFJ	Spring, Pause Lock Lever	AA
060	MSPRD0186AFFJ	Spring, APLD Lever	AA
061	MSPRD0187AFFJ	Spring, Auto Stop Collar	AB
062	MSPRD0188AFFJ	Spring, Fast-forward/Rewind Roller	AA
063	MSPRD0189AFFJ	Spring, Fast-forward/Rewind Roller (Left)	AA
064	MSPRD0190AFFJ	Spring, Fast-forward/Rewind Roller (Right)	AA
065	MSPRD0191AFFJ	Spring, Record Safety Lever	AA
066	MSPRD0192AFFJ	Spring, Auto Stop Killer Lever	AA
067	MSPRP0186AFFW	Plate Type Spring, Cassette Retaining	AB
068	MSPRP0187AFFJ	Plate Type Spring, Sub Chassis	AC
069	MSPRP0199AFFJ	Plate Type Spring, Record/ Playback Switch	AF
070	MSPRT0533AFFJ	Spring, Erase Safety Proof	AA
071	MSPRT0534AFFJ	Spring, Take-up Idler Lever	AA
072	MSPRT0548AFFJ	Spring, Sub Chassis Return Lever	AA
073	NBALS0053AFZZ	Steel Ball, ϕ3.5	AA
074	NBLTH0065AFZZ	Belt, Flywheel Drive	AD
075	NBLTK0125AFZZ	Belt, Auto Stop	AC
076	NBRGC0061AFZZ	Bearing, Capstan	AE
077	NDAIR0127AFSA	Turntable, Take-up	AF
078	NDAIR0128AFSA	Turntable, Supply	AE
079	NDRM-0153AFZZ	Worm Wheel, Auto Stop	AE
080	NFLYC0073AFZZ	Flywheel	AK
081	NIDR-0061AFZZ	Idler, Take-up	AF
082	NPLYR0050AFZZ	Pulley, Take-up	AB
083	NPLYR0060AFZZ	Pulley, Worm	AE
084	NROLW0008AFZZ	Roller, Fast-forward/Rewind	AH
085	NROLX0003AFZZ	Gear, Rewind	AC
086	NROLY0016AFZZ	Pressure Roller	AE
087	NSFTN0004AFFW	Shaft, Worm Gear	AC
088	PCUSG0026AG00	Rubber, Brake Lever	AA
089	PGIDM0064AFZZ	Guide, Auto Stop Actuating Lever	AB
091	RHEDA0074AFZZ	Erase Head	AN
092	RHEDH0084AFZZ	Record/Playback Head	AT

MISCELLANEOUS

REF. NO.	PART NO.	DESCRIPTION	CODE
101	GCABA1512AFSA	Cabinet, Front (GF-8686H)	AW
	GCABA1512AFSC	Cabinet, Front (GF-8686HB)	
102	GCABB1512AFSA	Cabinet, Rear	AX
103	GFTAB1111AFSB	Battery Compartment	AF
104	GFTAC1111AFSA	Cassette Compartment (GF-8686H)	AF
	GFTAC1111AFSB	Cassette Compartment (GF-8686HB)	
105	GFTAC1112AFSA	Transparent Plate, Cassette Compartment	AF
106	HINDM1287AFSA	Serial No. Plate	AC
107	GWAKP9036AFSA	Panel, Operation (GF-8686H)	AQ
	GWAKP9036AFSB	Panel, Operation (GF-8686HB)	AN
108	HDALM0300AFSA	Dial Plate	AL

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
109	HDECA0414AFSA	Decoration Plate, Front Cabinet Lower	AG
110	HDECA0409AFSA	Decoration Plate, APLD Number Storing Buttons	AD
111	HDECA0367AFSA	Decoration Frame, Cassette Compartment	AG
112	HDECA0368AFSA	Decoration Plate, Cassette Compartment	AC
113	HDECQ0109AFSA	Decoration Ring, Tweeter	AG
114	HDECQ0116AFSA	Decoration Ring, Microphone (Right)	AD
115	HDECQ0117AFSA	Decoration Ring, Microphone (Left)	AD
116	HINDP0210AFSA	Indication Plate, Warning (GF-8686H)	AC
	HINDP0217AFSA	Indication Plate, Warning (GF-8686HB)	AC
117	HPNC-0117AFSA	Punching Metal, Speaker (GF-8686H)	AN
	HPNC-0117AFSC	Punching Metal, Speaker (GF-8686HB)	
118	HPNLD1176AFSA	Plate, Transparent	AG
119	HSSND0251AFSA	Pointer, Dial	AD
120	JHNDG1062AFSB	Handle	AT
121	JKNBM0276AFSE	Knob, Editing Switch	AB
122	JKNBN0309AFSA	Knob, Tuning	AC
123	JKNBN0385AFSB	Knob, Band Selector	AE
124	JKNBN0436AFSA	Knob, Volume Control/ Balance Control/Tone Control/Mixing Microphone Volume Control	AE
125	JKNBP0100AFSA	Knob, Tape Selector Switch	AB
127	LANGQ0636AFFW	Bracket, P.W. Board Retaining	AA
128	LANGR0453AFFW	Bracket, Volume	AC
129	LANGS0060AFFW	Bracket, Woofer Speaker Settle	AA
130	LANGT0909AFFW	Bracket, VU Level Indicator/ Tuning Indicator P.W. Board Retaining	AB
131	LHLDA1052AFSA	Holder, FM/SW Rod Antenna	AA
132	LHLDF1212AFZZ	Frame, Tuner P.W. Board Retaining	AH
133	LHLDF1213AFZZ	Frame, Audio P.W. Board Retaining	AL
134	KCOUB0089AFZZ	Digital Tape Counter	AK
135	LHLDW1068AFZZ	Wire Holder, 100 mm	AA
136	LHLDW1075AFZZ	Wire Holder, 60 mm	AA
137	LHLDW9003CEZZ	Wire Holder	AA
139	LHLDZ1088AFZZ	Guide Drum	AB
140	LHLDZ3056AFZZ	Holder, Microphone	AB
141	LX-CZ0002AFZZ	Screw, Rear Panel	AB
142	MLEVP0123AFZZ	Lever, Record/Playback Switch	AC
143	MSPRC0175AFFN	Spring, Battery (Large)	AD
144	MSPRC0176AFFN	Spring, Battery (Small)	AB
145	MSPRD0204AFFW	Spring, Cassette Compartment	AB
146	MSPRP0089AGFW	Plate Type Spring, Cassette Compartment	AB
147	MSPRT0003AGFW	Spring, Dial Cord	AA
148	NBLTK0135AFZZ	Belt, Counter	AC
149	NDRM-0157AFZZ	Drum, Dial Cord	AD
150	NPLYB0050AFZZ	Pulley, Dial Cord	AA
151	NPLYB0051AFZZ	Pulley, Dial Cord	AA
152	LHLDZ1087AFZZ	Guide Drum	AC
153	NSFTD0166AFFW	Shaft, Dial Cord	AE
154	PCOVW1100AFZZ	Cover, Mains Socket	AA
155	PCOVW9108AFZZ	Cover, Tip	AA
156	PCOVZ7056AFZZ	Battery Compartment	AC
157	PCUSS0120AF00	Cushion, Drum Guide	AA
158	PCUSU0092AG00	Cushion, Battery Compartment	AA
159	PCUSU0128AFZZ	Cushion, Coil	AA
160	PCUSU0236AFZZ	Cushion, VU Level Indicator/ Tuning Indicator P.W. Board	AA
161	PFLT-0095AG00	Felt, Rear Cabinet/Cassette Compartment	AA
162	PFLT-0127AF00	Felt, Battery Compartment	AA
163	PFLT-0304AF00	Felt, Function Selector/ Mixing on/off Switch	AA
164	PFLT-0339AF00	Felt, Front Cabinet	AA
165	PRDAR0180AFFW	Heat Sink	AD
166	PSLDM3154AFFW	Shield Plate, Tuner P.W. Board	AC
167	PSLDM7114AFZZ	Shield Plate	AD
168	PTPEC0005AG00	Ribbon, Battery Removal	
⚠	QACCK0050AFZZ	Mains Supply Cord	AL
	QACCK0051AF00	Mains Supply Cord	AL
169	QANTR0114AFZZ	FM/SW Rod Antenna	AM
PG404	QCNCM171BAFZZ	Plug, 2 Pin	AB
PG401	QCNCM173DAFZZ	Plug, 4 Pin	AB
PG403	QCNCM173DAFZZ	Plug, 4 Pin	AB
PG402	QCNCM175FAFZZ	Plug, 6 Pin	AC
PG405	QCNCM175FAFZZ	Plug, 6 Pin	AC
PG101	QCNCM175FAFZZ	Plug, 6 Pin	AC
PG701	QCNCM377DAFZZ	Plug, 4 Pin	AB
PG501	QCNCM395KAFZZ	Plug, 10 Pin	AC
SO701	QCNCW144DAFZZ	Socket, 4 Pin	AB
SO101	QCNCW146FAFZZ	Socket, 6 Pin	AB
170	QCNTZ0050AFZZ	Plug (Large)	AA
171	QCNTZ0051AFZZ	Plug (Small)	AA
SO402	QCNW-0398AFZZ	Socket, 6 Pin with Wire Lead	AG
172	QCNW-0405AFZZ	Flat Cable, 8 Pin	AC
SO405,	QCNW-0657AFZZ	Socket, 6 Pin with Wire Lead	AG
SO401, SO403	QCNW-0769AFZZ	Socket, 4 Pin with Wire Lead	AL
	QCNW-0770AFZZ	Tip with Wire Lead	AD
⚠ FU601	QFS-C102CAGNI	Fuse, 1.0A	AE
173	QHWS-3001AGFN	Lug	AA
174	QFSHD1001AGZZ	Fuse Holder	AA
J701	QJAKA0055AFZZ	Mixing Microphone Jack	AC
	QCNW-0488AFZZ	DIN Type Connecting Cord	AQ
J203, J303	QSOCD2268AFZZ	External Speaker Jacks	AE
J202, J302, J201, J301, J402,	QJAKZ0081AFZZ	J202: Phone Input Jacks (Right-ch) J302: Phone Input Jacks (Left-ch) J201: External Microphone Jacks (Right-ch) J301: External Microphone Jacks (Left-ch) J402: Remote Start/Stop Switch Jack	AN

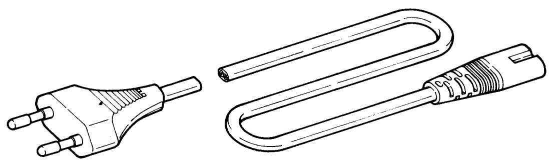
PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE
J401	QJAKJ0069AFZZ	Headphones Jack	AG
175	QJAKZ0101AFZZ	Jack Cover	AD
176	QLUGP0111CEFW	Lug 13 mm	AA
177	QSOCD2554AFZZ	Socket (DIN), Record/Playback	AF
SW602	QSOCE0551AFZZ	AC Supply Voltage Selector	AG
⚠ SW601, SO602, J213	QSOCZ2469AFZZ	AC/DC Input Terminal	AG
SW10	QSW-B0123AFZZ	Function Selector	AK
SW701	QSW-B0124AFZZ	Mixing on/off Switch	AF
SW102	QSW-S0241AFZZ	Record/Playback Switch	AL
SW11	QSW-S0267AFZZ	Beat Cancel Switch	AD
SW105	QSW-B9085AFZZ	Tape Selector Switch	AH
SW502	QSW-F0044AGZZ	APLD Switch	AD
SW501	QSW-F0049AGZZ	Motor Switch	AE
SW103	QSW-P0172AFZZ	Editing Switch	AF
SW101	QSW-R0160AFZZ	Band Selector	AN
SW8 (A∼G)	QSW-Z0082AFZZ	APLD Number Storing Buttons Assembly (1∼7)	AZ
178	QTANB0156AFFN	Battery Terminal	AB
TB1	QTANN0254AFZZ	External FM Antenna Terminal	AF
180	QTIPZ0062AFZZ	Tip	AA
181	RMICC0072AFZZ	Microphone	AF
MO101	RMOTV0080AFZZ	Motor	AU
SOL501	RPLU-0102AFZZ	Plunger	AH
	RTPEK0079AFZZ	Cassette Tape	AM
	SPAKC1523AFZZ	Packing Case (GF-8686H)	AM
	SPAKC1555AFZZ	Packing Case (GF-8686HB)	AM
SO501	Not Available	Socket, 12 pin (Parts of QSW-Z0082AFZZ)	
SO404	Not Available	Socket, 2 pin (Parts of RMOTV0080AFZZ)	
	SPAKH0548AFZZ	Packing Add. (Left)	AE
	SPAKH0549AFZZ	Packing Add. (Right)	AE
	SSAKA0024AGZZ	Polyethylene Bag, Operation Manual etc.	AA
	SSAKH0087AGZZ	Polyethylene Bag, Unit	AB
	TCAUA0178AGZZ	Caution Label, Voltage Selector (Arabic)	
	TGANG1039AFZZ	Warranty	
	TINSZ0233AFZZ	Operation Manual, (English/German/French/Swedish)	AK
	TINSZ0239AFZZ	Operation Manual, (English/French/Swedish/Arabic/Chinese/Korean)	AK
	TLABF0183AFZZ	Label, FTZ (GF-8686H)	
	TLABF0186AFZZ	Label, FTZ (GF-8686HB)	
	TLABS0080AFZZ	Label, SEMKO	
	TLABS0081AFZZ	Label, NEMKO	
	TLABS0082AFZZ	Label, DEMKO	
	TLABS0083AFZZ	Label, SEV	
	TLABT0052AFZZ	Label, APLD	
	TMAPC0688AFZZ	Schematic Diagram	
	TTAGH0136AFZZ	Tag	
SP1, SP2	VSP0016PB37SP	Speaker, Woofer	AW
SP3, SP4	VSP00HNTX16ZC	Speaker, Tweeter	AH
182	TLABZ0130AFZZ	Mirror	

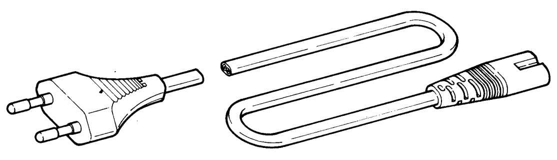
P. W. BOARD ASSEMBLY (Not Replacement Item)

PART NO.	DESCRIPTION
DUNTK0071AF02	Audio
DUNTR0132AF08	Tuner

QACCK0050AFZZ (Grey)



QACCK0051AF00 (Black)



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